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ABSTRACT

The cost elements were identified and a methodology developed to analyze the total costs of allied health education programs and the cost per student for purposes of planning the allocation of scarce resources. The study was conducted by the Ohio State University School of Allied Medical Professions and focused on the following 10 allied health professions: Circulation Technology; Medical Communications; Medical Dietetics; Medical Illustrations; Medical Record Administration; Medical Technology; Occupational Therapy; Physical Therapy; Radiologic Technology; and Respiratory Technology. Emphasis was on the curricula of the programs involved, activity of faculty members in each of the 10 programs, the clinical preceptor activities, the cost of the clinical component of the total educational program, and the identification and allocation of costs to related programs. Major elements examined in the cost analysis were: program description, student enrollment, faculty, and total program costs. One of the many conclusions reached was that the student contact hours, student enrollment and faculty-student group size are essentially "demand"-related factors, while elements such as faculty contact hours, faculty-student ratios, faculty availability and faculty requirements are "supply"-related factors. It is suggested that the methodology applied in this study should be applicable to similar cost evaluations in other institutions as well as serving as a catalyst for future study. Selected references, a glossary of terms, and questionnaires are appended. (LC)

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The Ohio State University
School of Allied Medical Professions

Cost Analysis of Ten Allied Health Education Programs

- Circulation Technology
- Medical Communications
- Medical Dietetics
- Medical Illustration
- Medical Record Administration
- Medical Technology
- Occupational Therapy
- Physical Therapy
- Radiologic Technology
- Respiratory Technology

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COST ANALYSIS of
TEN ALLIED HEALTH EDUCATION PROGRAMS

COST ANALYSIS

OF

TEN ALLIED HEALTH EDUCATION PROGRAMS

Ronald L. Harper, Ph.D.

Meredith A. Gonyea, Ph.D.

December 31, 1977

MEMORANDUM

TO: Reader of "Cost Analysis of Ten Allied Health Education Programs"

FROM: Ronald L. Harper, Ph.D., and Meredith A. Gonyea, Ph.D.

SUBJECT: Suggested Approach to the Use of the Document

The "Cost Analysis of Ten Allied Health Education Programs" was prepared as a comprehensive document to serve as a source of information for a variety of potential users. It contains an analysis of the costs of ten allied health programs and the procedures used to collect that information. Additionally, it contains a description of the analytical methodology developed, the elements involved in affecting cost, a list of selected references and a glossary of terms.

Depending on the information sought, the reading of this document may be approached in several ways.

For a General Overview, it is suggested that you read:

Chapter IV Summary of Conclusions and Future Plans pp. 185-212

For Understanding of the Variables Affecting Cost, it is suggested that you read:

Chapter I Introduction pp. 1-10
Chapter III Results and Discussion
  B. Elements Analysis pp. 140-184

For a Specific Allied Health Profession Program, it is suggested that you read:

Chapter I Introduction pp. 1-10
Chapter III Results and Discussion: p. 26 plus Specific Program
Chapter IV Conclusions pp. 185-212

For Understanding of the Methodology, it is suggested that you read:

Chapter I Introduction pp. 1-10
Chapter II Methodology pp. 11-25
Chapter III Results and Discussion
  A. Procedure Explanation 1. Medical Dietetics pp. 26-52

For a Comprehensive Review and Future Reference, it is suggested that you read:

Chapters I-IV in Sequence pp. 1-212

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DATA ANALYSIS AND MANUSCRIPT DEVELOPMENT

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THE COST STUDY PROJECT

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As project director it is an honor to acknowledge the efforts of those who have made possible the study that led to this document and also those who assisted with the development of the document itself. With any undertaking such as this there is a beginning. The genesis of this study lies with concerns expressed by Dr. Robert J. Atwell, Director of the School of Allied Medical Professions, The Ohio State University. Over an extended period of time he had indicated the need for a comprehensive study of the cost of educating allied health professionals. Initial steps toward ascertaining a portion of these costs were begun in conjunction with an allied health special improvement grant #4-D01 AH 50402-01, which provided personnel to analyze, organize and keep a regular accounting of the operating budgets, by program, within the School of Allied Medical Professions at The Ohio State University. The dedicated work of Ms. Elizabeth G. Smith should be noted in conjunction with these early efforts. Based in part on information obtained as a result of that special improvement grant, an additional special project grant #1-A12 AH00730-01 was written, submitted and approved. Thus funds for additional portions of the project were obtained. These funds and others have contributed to the development of this document.

W.S. Brooks, Division of Associated Health Professions, BHM, HRA, and Merrill B. Delong, O.D., Chief, Educational Development Branch, Division of Associated Health Professions and his staff are acknowledged for their support and assistance.

The myriad of detailed work involved in this special project was accomplished by a group of tireless, dedicated, enthusiastic, and helpful staff and colleagues.

As a member of the main project staff, Mr. Gerald Newhouse was instrumental in implementing the initial phases of the project. He was responsible for identifying, selecting and organizing the staff and for establishing the fiscal arrangements. He worked to design the questionnaires and the general methodological procedures for their administration which have resulted in outstanding results in efforts to collect portions of the data. Miss Jeannette L. Fraser is to be especially commended for her efforts during the final phases of staff organization and assignment, and especially for organizing and processing both the existing data and those which were collected and analyzed. Her contributions in checking the accuracy of calculations and assisting in the proofing of this final document are acknowledged with deep appreciation. Other study team members who made important contributions to the success of the project were Ms. Maureen A. Kane, Ms. Madeline E. Hare, Ms. Joan M. Jennings, and Mr. Raymond L. Ward.

Additional assistance was received from staff members in the School who have been directly supportive. They are Ms. Regina L. Roberts, Ms. Rose M. Coleman and especially Ms. Carol J. Mauger who continued and expanded on the earlier work of Ms. Smith.

Special mention must be made of Dr. Meredith A. Gonyea's contribution to the project as consultant and co-author of this manuscript. Her untiring efforts and uncanny insight into the problems of cost analysis have been essential to the completion of the project. As a colleague and friend with whom to test new ideas and approaches, to review data and to critique written material, she has no peer in the eyes of all members of the project team. Her conceptualizations regarding the methodology made a major contribution to the original project and the subsequent expansion and development of concepts and application of the methodology. These contributions have added immeasurably to the theoretical constructions and interpretations contained in this document.

Dr. Gonyea is the Director of Institutional Research for the College of Medicine and Dentistry of New Jersey whose President, Dr. Stanley S. Bergen, and Executive Vice President, Dr. Charles Vevier, have actively encouraged research on resource allocation methodology in health professions education. Contributions by this institution to the production of this manuscript are gratefully acknowledged.

There are two additional groups of individuals who have contributed to the success of the project and without whose understanding and assistance this undertaking would not have been possible. The first group is the faculty of the School of Allied Medical Professions. They were extremely helpful, tolerant and patient as questions were asked and re-asked. These faculty members provided invaluable assistance in efforts to learn the intricacies of the curriculum design and its presentation. They have the authors' unending gratitude for their contributions. The second group is composed of the many allied health profession preceptors who work with the students in the clinical settings. To them we express our sincere thanks for the time that they gave to the project. Their careful attention to the questions which were asked and the very considerable amount of time that they contributed in providing information related to the study were major elements in its fruition.

Two other persons deserve particular attention. Ms. Diann R. Milheim has transcribed and typed the beginning drafts that have led to this document. Ms. Rita V. McGlasson is especially appreciated for her meticulous attention to the many tables and final typing of materials which appear in this manuscript. Without efforts of persons like these fine professionals a document such as this could not be completed.

The authors have attempted to take the results of the initial project, add theoretical constructions which illustrate the application of the methodology, and describe and present all of these phases and the methodology so that it can be easily understood. In an effort to accomplish this, the authors are indebted to Dr. Martha H. Fales, Director of Dental Hygiene at the University of Washington, for suggesting the concept of theoretical constructions and for providing a curriculum on which the methodology was first applied. This served as a model for the work contained herein. Not only for her professional contribution but also for her continuing moral support the authors are especially grateful.

To assist in insuring the readability and clarity of the document, the authors were pleased to have four colleagues read drafts of the document. Therefore, we express our thanks to Mary E. Keegan, Ralph G. Miller, Helen M. Sady and James T. McGill. Their extensive efforts were extremely helpful and are gratefully acknowledged.

While the manuscript was in its final developmental stages the opportunity arose to present the methodology as part of several workshops titled "Training Institute on Allied Health Administration," sponsored by the American Association of State Colleges and Universities in conjunction with a grant from the H.E.W. Division of Associated Health Professions. Feedback from these presentations was helpful in increasing the clarity of this document.

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There are countless others who have been of assistance to us who cannot be mentioned individually. To all of them go our sincere thanks and heartfelt appreciation.

As the document is reviewed and the methodology is used, it is requested that any omissions or errors be communicated to the authors so that corrections may be noted and future research enhanced. The authors respectfully request and encourage comments and questions for our "Research in Progress."

Indeed it has been rewarding to work with such a cooperative, considerate, and inquisitive group of people. As a very grateful project director and author, to every organization and person who has supported and assisted with the project and with the subsequent development of this document, I give my sincere thanks.

Ronald Lee Harper

Kansas City, Kansas
December 31, 1977

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Introduction

Some of the professions now subsumed under the term 'Allied Health" have existed for a number of years, e.g., Occupational Therapy, Physical Therapy and Medical Technology. However, since the passage of the Allied Health Training Act in 1966 there has been a dramatic expansion in the number of Allied Health professions, in the number of professionals being educated in these professions, and in the number of programs providing the educational experiences. Along with the foregoing increases there have been pressures from inflation in the economy and other technical factors leading to increased costs of educating such professionals.

During the same period of time there has been a general increase in the complexity of the structure and content of the academic programs offered especially with the utilization of new teaching techniques and methodology. The addition of more academically sound content has occurred as many programs have moved from "on-the-job-training programs" in hospitals to university and community colleges where major portions of the curriculum content are now offered. This relocation has frequently led to the utilization of multiple sites for clinical instruction. A large variety of academic programs have become organized into Schools of Allied Health. More specific essentials for accredited programs also have been developed. Complex interdisciplinary relationships and other factors also have contributed to the complexity of analyzing the programs from a cost benefit

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perspective. Figure 1 presents a graphic view of the complex interaction of an Allied Health program and its environmental system.

Large scale cost studies of health professions, in particular medicine, have been undertaken by such organizations as the National Academy of Sciences Institute of Medicine and the American Association of Medical Colleges. All such studies have excluded Allied Health profession programs as beyond their scope. The complex Allied Health programs, therefore, remain poorly understood and studied.

Several important questions remained unanswered. For example:

1. What do Allied Health programs cost?
2. Who pays the cost of the programs?
3. What elements contribute to the cost and in what manner, e.g.,
    a) Curriculum structure
    b) Students and faculty
    c) Direct and indirect cost factors?
4. What is the cost of the didactic component of the curriculum?
5. What is the cost of the clinical component of the curriculum?
6. What is the interrelationship of the curriculum structure and cost?
7. What should a program cost?
8. Can a cost analysis methodology be developed that is compatible with planning methodologies?

It appeared desirable to conduct a comprehensive study of Allied Health education which included both the didactic and clinical portions of the educational program with regard to costs.

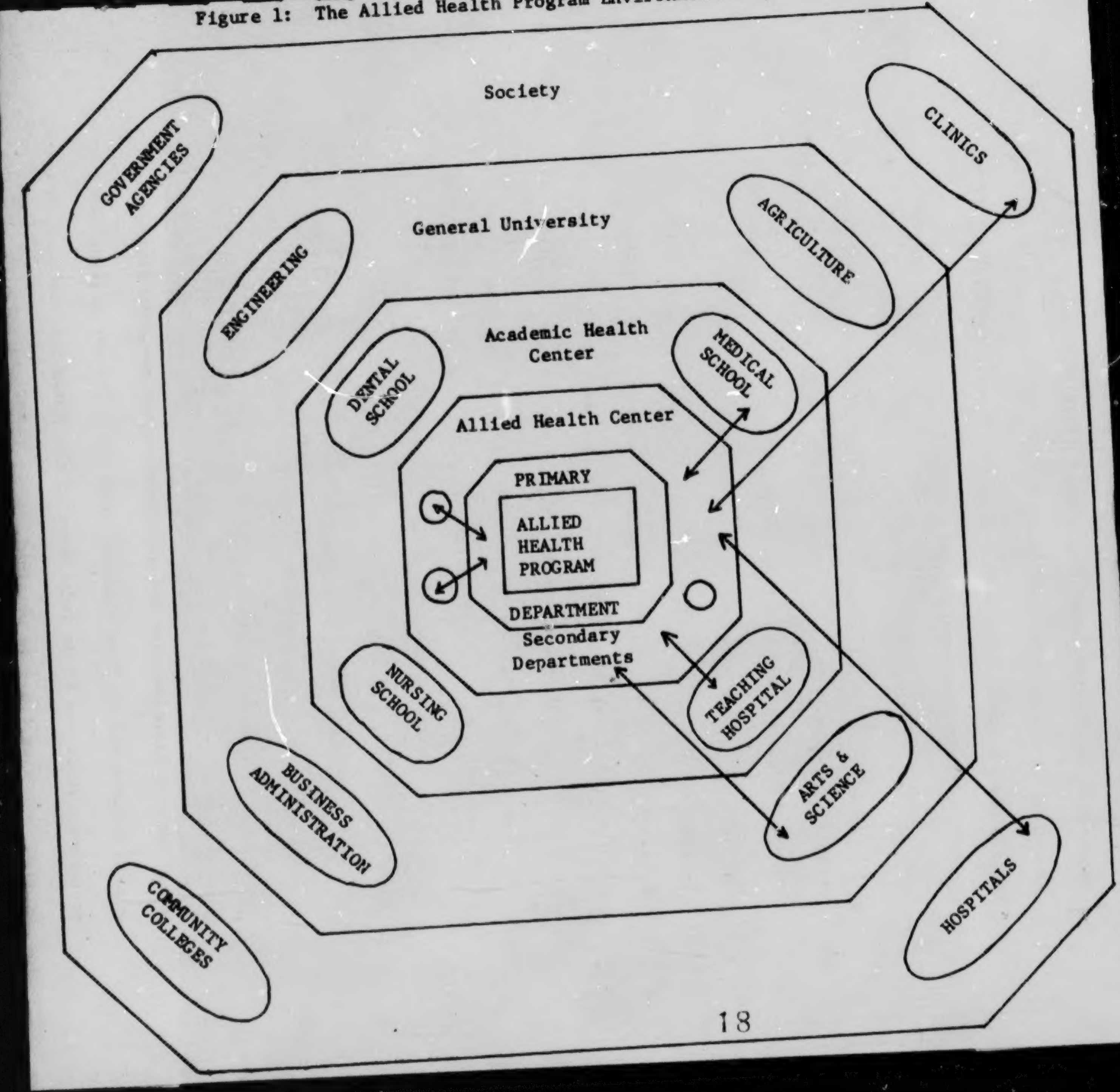


Figure 1: The Allied Health Program Environmental System

Society
GOVERNMENT AGENCIES
CLINICS
General University
ENGINEERING
AGRICULTURE
Academic Health Center
DENTAL SCHOOL
MEDICAL SCHOOL
Allied Health Center
PRIMARY
ALLIED HEALTH PROGRAM
DEPARTMENT
Secondary Departments
NURSING SCHOOL
TEACHING HOSPITAL
BUSINESS ADMINISTRATION
ARTS & SCIENCE
COMMUNITY COLLEGES
HOSPITALS

Since data on some of the operating costs of Allied Health programs at the School of Allied Medical Professions at The Ohio State University was available, it was determined that a grant proposal should be developed in order to attempt to ascertain the total cost of educating allied health professionals in ten of the School's programs. Subsequently, such a grant was written, submitted and funded.

The major objective of this study was to identify the cost elements and to develop a methodology based on previous methodologies conjoined with new ideas and concepts to analyze the total costs of Allied Health education programs and the cost per student for purposes of planning the allocation of scarce resources. In essence, it was hoped that the new methodology could be a "management information system" that could be used at all levels of decision making from the individual faculty member to the level of national and international policy development, not only for allied health but for higher education in general.

Additional objectives for the study included (1) establishing the total cost for each discreet program and each discreet course within the program which included the instructional staff and other direct and indirect costs, (2) utilizing existing data as much as possible and collecting additional data only as needed and (3) disseminating the results of the project to other Allied Health programs through presentations and publications. The final major objective was to prepare for the development of a larger more comprehensive study which would involve baccalaureate and associate degree programs located in health centers and as free standing programs. The larger, more comprehensive study was to be undertaken if the funds from federal, private, or other agencies could be obtained.

It is important to understand something of the nature of the institution where this study was completed. The Ohio State University, (OSU) a land grant institution founded in 1870 and located in Columbus, is the largest university in Ohio and one of the largest in the nation. The university offers some 250 programs and approximately 7,800 courses from which the students may select.

The School of Allied Medical Professions (SAMP) at the Ohio State University is one of two Schools within the College of Medicine, the other being Nursing. The College of Medicine, along with Optometry, Dentistry, Pharmacy and Veterinary Medicine and the University Hospitals, can be considered as an academic health center. Other colleges within the Ohio State University are as follows: Administrative Science, Agriculture, Home Economics, Arts, Biological Sciences, Humanities, Mathematics and Physical Science, Social and Behavioral Science, Education, Engineering, Law and the University College. The University falls within an environment in the Columbus, Ohio area that has numerous local hospitals which cooperate with and offer clinical experiences for students in the School of Allied Medical Professions. Hospitals, clinics, and community health centers in 50 states offer clinical experiences for some of the students enrolled in these programs. Students in the School's programs in general receive their preprofessional experiences in courses offered by departments in the colleges of the general university. The professional course work is obtained in courses offered by the School of Allied Medical Professions and the professional primary department of their enrollment or the basic medical science departments located within the professional colleges, especially the College of

Medicine. The School's programs use a variety of full-time and part-time faculty members. Some of the part-time faculty members are paid directly by the School of Allied Medical Professions, others are paid by other Colleges within the University, the University Hospitals or other hospitals, clinics and agencies which provide assistance and resources for educating students in the programs of the School.

Figure 2 presents a detailed view of the School of Allied Medical Professions and its environment.

The Ohio State University School of Allied Medical Professions (SAMP) presently has 12 divisions offering the bachelor of science postbaccalaureate certificate, and/or masters degrees.

Major areas of study leading to a bachelor of science in Allied health professions are:

Circulation Technology
Medical Communications
Medical Dietetics
Medical Illustration
Medical Record Administration
Medical Technology
Occupational Therapy
Physical Therapy
Radiologic Technology
Respiratory Technology

In addition to these 10 baccalaureate programs the School offers post-baccalaureate certificate programs in Circulation Technology, Medical Illustration, Medical Technology and Physical Therapy. There is also a certificate program in Nurse Anesthesiology. A master of science program is offered with two major options. The first is in Hospital and Health Service Administration and the second is for health professionals who wish to emphasize the development of administrative or educational skills and theory.

Figure 2: Ohio State University: School of Allied Medical Professions (OSU:SAMP) and Its Environments System

- SOCIETAL ENVIRONMENT
  - GENERAL UNIVERSITY
    The Ohio State University General Education Colleges
    - ACADEMIC HEALTH CENTER
      Professional Colleges and Hospitals
      - ALLIED HEALTH CENTER
        School of Allied Medical Professions
        - ALLIED HEALTH PROGRAM
          Primary Department
        - Circulation Technology
        - Medical Communications
        - Medical Dietetics
        - Medical Illustration
        - Medical Record Administration
        - Medical Technology
        - Occupational Therapy
        - Physical Therapy
        - Radiologic Technology
        - Respiratory Technology
        - Graduate Programs
        - Nurse Anesthesiology
      - Medicine
      - Dentistry
      - Optometry
      - Pharmacy
      - Veterinary Medicine
      - The University Hospitals
    - Administrative Science
    - Agriculture and Home Economics
    - Arts
    - Biological Sciences
    - Humanities
    - Mathematics and Physical Science
    - Social and Behavioral Science
    - Education
    - Engineering
    - Law
    - University College
  - Hospitals, Clinics, and Community Health Centers
    Over 150 in 50 States

The ten baccalaureate programs of the OSU:SAMP were chosen for this cost study because they represented a variety of allied health professions and had a variety of curriculum designs within a comparable degree level and a fixed curriculum length of four years. There were programs that utilized common courses (e.g., Physical Therapy and Occupational Therapy) and programs that did not (e.g, Circulation Technology and Medical Illustration). Some of the programs had all of the clinical experience within the Columbus, Ohio area (e.g., Medical Dietetics, Respiratory Technology) and some did not (e.g., Physical Therapy and Occupational Therapy). The amount of input from physicians also varied in the programs. It was believed that these programs had wide applicability to other such allied health baccalaureate programs around the country and would be of more interest to a larger population of people.

There were several major components identified as a part of the initial study, the first of which was to analyze carefully the curriculum of the programs involved. This component included a careful assessment of the numbers of students, the numbers of faculty, the course descriptions and the mode of delivery. The second component for which information needed to be developed was the activity analysis of the faculty members in each of the ten programs. These first two components were in large measure related to data pertaining to the didactic component of the program offering. The third component that was identified and for which information was to be sought was an activity analysis of the clinical preceptors activities and the costs of the clinical component of the total educational program.

The fourth component was the identification and allocation of costs related to the programs. The major cost categories identified were faculty salaries, support personnel salaries, direct supplies and equipment costs, direct travel, plant operation and miscellaneous costs and indirect other costs including general administration costs.

There were several outcomes which were considered to be of significance if the objectives of the study were carried out as it was conceived. First, with the completion of the study at the School of Allied Medical Professions in the Ohio State University's College of Medicine, program costs would be derived.

Insight into the costs related to curriculum would be provided in order to enable existing schools of allied health to evaluate their programs in terms of cost and establish a basis for estimating a cost for improvements or changes in curriculum and faculty utilization and to assist new and/or future schools of allied health to determine total costs prior to establishment of programs in the various disciplines.

The study represents an attempt to devise a comprehensive method for gathering and analyzing cost data on ten baccalaureate programs in Allied Health. It was designed to meet the needs of a specific school, but the principles, procedures and experiences developed could hopefully be utilized by other existing schools of Allied Health, emerging schools of Allied Health, private and non-private institutions as well as government agencies and others interested in health care planning and Allied Health education.

With the increasing costs and changing educational philosophies, national attention is focused on the need for the accurate determination of the costs of Allied Health educational programs. The methodology designed in conjunction with this study has major implications for persons developing new programs or re-designing old curricula, since the methodology can be used for planning purposes. The methodology allows one to construct a theoretical curriculum and estimate costs of such a curriculum, thereby allowing a comparison to be made between the costs of offering the necessary content in a variety of curriculum formats. It also allows one to review existing curricula with regard to increasing its cost effectiveness. It was with this concern that the theoretical constructions were undertaken and discussed as part of this project.

Generally speaking, the goal of this study was to develop a cost methodology which would be applicable to other educational settings and which could be utilized for planning purposes. It also was hoped that this methodology might be used for disciplines other than allied health, in essence, higher education in general.

The following chapters present the methodology developed for the study, the results of the program and element analysis for the OSU:SAMP: Ten Cost Study programs and the conclusions and future plans which resulted from the analysis. Additionally, these chapters contain theoretical constructions and interpretations of interrelationships which have been developed since the original study was concluded.

Selected References, a glossary of terms and detailed appendices have been included to assist the reader in understanding and hopefully using the program cost analysis procedure for their own analytical and planning purposes and also as a management information system.

II. Methodology

A. Overview of Study Activities

Following the receipt of a notice for funding, the grant proposal activities began immediately to select members of the cost study project team. Initially a full-time research assistant was employed. This person was in turn responsible for recruiting additional personnel to fill the positions of the part-time graduate research associate, a part-time student research assistant and two part-time student clerical assistants. The project director proceeded to arrange for a program cost analyst to act as consultant on the grant. Since not all of the cost study project team members joined the group simultaneously, there was an effort to acquaint each of them with the objectives of the study and the developing methodology. It also was necessary to orient the study team to The Ohio State University School of Allied Medical Professions, its history and the objectives of the ten programs selected to be studies. It additionally was considered essential to identify for the cost study team the faculty members within the School and various preceptors for the programs with whom team members would be interacting, and who would play important roles in providing data and answers to questions. Careful attention was given to defining the responsibility of each of the cost study team project members. As initial progress was made, timetables for the project were developed. Grant resources were allocated and reviewed and final determinations were made regarding the distribution of supplies, equipment, and allocation of staff salaries. Appendix A presents a detailed outline of the project activities as originally conceived.

One of the initial project activities was to review the related literature. A mechanized literature search was completed using the information center at The Ohio State University Libraries including Med-Line and other sources at the Health Center Library. Copies of articles and other publications were collected and reviewed. This search included unpublished as well as published studies. References considered most pertinent to the project were selected for inclusion in this report in the Selected References section. The reader may wish to refer to these selected references for related information.

B. Data Collection Procedures

1. PROGRAM: Curriculum Description

Each of the ten programs included in this study has an entrance requirement of one or two years of preprofessional education which may be obtained from any accredited college or university; however, most students complete the preprofessional phase of their education at The Ohio State University.

After students have completed the specified preprofessional phase of education and made application to the undergraduate professional program, they are considered in a selection process for admission to the professional curriculum within the School of Allied Medical Professions. This organization of a professional phase of education following a core of basic education courses makes possible the selection of the most able individuals from the undergraduate student population at Ohio State University as well as undergraduates from other accredited educational institutions. The selection process is completed based on criteria established by the faculty in the School's respective divisions.

All programs which were studied have the two major phases, preprofessional and professional curriculum. Additionally some of these programs have an independent, terminal clinical phase. For each program an outline of the suggested preprofessional and professional curriculum was obtained. These are presented in detail in Appendix B. Utilizing these detailed outlines, it was possible to ascertain the department or division which offered each of the courses, i.e., other divisions within the School of Allied Medical Professions, basic science departments in the College of Medicine, or departments in the general university. Utilizing these same curriculum outlines it also was possible to ascertain the instructional mode or modes used for each of the courses, i.e., lecture, laboratory, or clinic.

A detailed course identification analysis was also undertaken. This involved those courses taught by the School of Allied Medical Professions for the professional curriculum. This analysis included determination of the times the courses were taught and the modes of instruction. It also included detailed course descriptions, lists of faculty members, and other personnel who were involved in presenting the course material. In general the faculty members were those salaried by the School of Allied Medical Professions as well as those who carried courtesy, clinical, or adjunct appointments.

The first major developmental phase of the project was the construction of an interview instrument to be administered to the faculty members who taught the didactic portion of the SAMP professional curriculum. An initial draft of the instrument was prepared with several subsequent modifications and improvements by the members of the cost study team. Specific faculty members in the School of Allied Medical Professions were identified and asked to participate in a pre-test of the interview instrument. Following these initial pre-test interviews the instrument was evaluated and revisions were prepared. Additional faculty members were utilized as participants in the second pre-test prior to utilization of the instrument. Following the second pre-test additional evaluation and revision was undertaken before the definitive instrument was printed. A copy of the final interview schedule and related materials appears in Appendix C.

Using the data collection instrument designed for the didactic component of the curriculum, interviews were scheduled with each member of the School's faculty. A sample instrument was distributed to the faculty member prior to the interview. This sample form contained information for a fictitious course so that the faculty member could review it and prepare the necessary data for the in-person interview with the study team member. Additionally each faculty member received an interview schedule for each course for which they were identified as the primary instructor or course leader. Faculty members also were asked whether they had offered any course not identified by the cost study team during the year of the study so that completed forms could be ascertained for any such course.

2. Student Enrollment

The numbers of students enrolled in the School of Allied Medical Professions during the actual 1974-75 school year were identified by both preprofessional and professional years. The enrollment statistics are shown in Appendix D.

3. Faculty Activity Analysis

OSU:School of Allied Medical Professions Faculty

The next major effort of the cost study project was to develop an activity analysis for the full-time faculty of the OSU School of Allied Medical Professions. This was accomplished through the interaction with a planning task force involving several members of the School's faculty. The activity analysis involved the use of the delphi process and was divided into five separate phases. The data collection process allowed for each faculty member to indicate for each of the categories outlined where they believed that their time was allocated. This information was collected in terms of average hours per week assigned to the specific category. Following the receipt of the data from each faculty member of each division, information was compiled by division and averages for the division computed.

These average figures by category were distributed to each faculty member who was then asked to indicate what they believed an "ideal" distribution of their activities should be. Responses from each faculty member were collected and averages for each of the programs calculated. These average results were distributed to each division director who also was asked to construct an "ideal" distribution for their specific division. Responses representing the composite information on the constructed ideal activity distribution for each of the divisions and their directors were then given to the School's central administrative group who were asked to provide their perspective of the ideal distribution of activities for the specific division in question. These data were all assembled for use by the cost study staff. Samples of the forms used and a summary of the results appear in Appendix E.

This was considered an important step in the long range implication of using the information and methodology for planning purposes. It was clear that different perceptions existed at different administrative levels (i.e., faculty members, division directors, and central administrators) regarding the time which should be distributed to specific activities. This delphi process helped identify these differences and the results could then be used to construct "ideals" at a later time when a planning process would be initiated. Also this data could be compared with the actual data collected on the faculty's instructional activities and existing data from previous studies in medicine in an effort to construct some "ideals" for each of the divisions. In a planning phase these ideals would be developed to be in concert with all other activities and demands placed on a faculty member.

As the methodology began to develop and its relationship to a "management information system" became clearer, it was obvious that the manner in which faculty members utilized or allocated their time was important. The importance was not only relevant to whether they would be able to obtain their personal objectives, but also whether the program or School objectives could be obtained. Appropriate allocation of resources, including faculty time, is critical if objectives are to be met.

Clinical Preceptors

The next major component of activities undertaken by the cost study team was the development of the clinical preceptor interview instrument. Initial drafts of the instrument were prepared and several of the School's faculty members who were responsible for the clinical coordination for the program were identified and asked to pre-test this instrument. Following a series of pre-test evaluations, revisions, and additional tests, the instrument was finally tested in the field. Samples of the materials developed for the administration of the clinical questionnaire are included in Appendix F.

Clinical sites used by the ten programs were in a variety of settings which included general hospitals, veterans administration hospitals, pediatric hospitals, rehabilitation facilities, psychiatric facilities and other health care facilities. Clinical facilities were located in the Columbus, Ohio area, other localities in the State of Ohio and in other geographic regions throughout the United States. Careful attention was given to identifying the clinical preceptors who were responsibile for working with students from these ten programs. Several of these clinical facilities were selected for on-site interviews. Cost study staff members traveled to these clinical sites to test the instrument with the clinical preceptors in the actual clinical setting.

The interviews with the clinical preceptors were undertaken with a considerable amount of time in pre-planning. Interviews were scheduled at a time that was convenient for the preceptor. This involved making travel arrangements and sending sample instruments and letters of introduction to them prior to conducting the personnel interviews. Telephone contacts with these preceptors were also made. Most preceptors included a tour of the facility as a part of the interview process and on-site visit by the cost study staff members. This was very useful to members of the cost study team in helping them to understand some of the complex interactions encountered by students when they participate in this phase of their education.

Cost study team members undertook question by question discussion of the interview instrument with the preceptor. This process was time-consuming and relatively costly but was believed to be one of the most useful steps for reaching the goal of a high percentage of returns of the completed instrument.

Following the field testing, the instrument was again revised for use. Prior to mailing of the final instrument (questionnaire), an introductory letter went to each clinical preceptor which explained the nature of the study and indicated that the instrument itself would follow. One week later a questionnaire with the cover letter was mailed. The School's divisional clinical coordinators were briefed on the instrument at the mailing time so that if they received calls from the clinical preceptors they could respond to the questions or refer the preceptors to the cost study team members. A follow-up letter and an addressed return card were mailed to each of the non respondents in an effort to gain additional completed questionnaires.

Results of the clinical preceptor questionnaire were analyzed for each clinical experience for each division. Additionally the subjective opinions of the clinical preceptors which were collected as a part of the data were analyzed. This involved the development of a code book, coding the data, key punching the data, analyzing the data and interpreting it. General results of this information were aggregated for each division and sent to clinical preceptors who indicated an interest in receiving such data (see Appendix F).

4. Cost Determinations

Information regarding faculty salaries was obtained and assigned to activities related to each of the programs. Development of a method by which assignment of the other costs could be made and determined was somewhat more complex. A careful inventory of the classroom and laboratory space utilized in teaching each course was completed. For the clinical components, in addition to the foregoing items, the clinical facilities used by staff members who were involved in instruction were also determined.

Detailed analysis was undertaken to ascertain information relative to the School of Allied Medical Professions physical facilities costs. This included building operating expenses related to water, electricity, sewage, and repairs. Space utilized by each program was ascertained from building blueprints in order to determine the square footage utilized by each division and assignment of primary and shared space utilization.

Indirect costs for each program also were calculated. This involved distributing the costs of the University's central administration. This was accomplished by utilizing personnel budget information, operating budget information, and total enrollment of students at The Ohio State University. The College of Medicine administrative costs and information regarding personnel and operating budgets as well as the total enrollment in the College were ascertained. It was also necessary to calculate indirect costs for the non-School of Allied

Medical Professions Teaching Responsibility Units of the University. These figures were obtained using University personnel budget distributions in order to develop an indirect cost factor. The results of these calculations appear in Appendix G.

C. Program Cost Calculations

Along with some of the foregoing activities, efforts were made to begin development of a formula for arriving at the costs of these programs. The initial objective was to analyze the cost per course and then summarize the courses for each curriculum to arrive at the total cost per student per year in the ten programs under study. As data was being collected and analyzed, it became obvious that this approach would be extremely time-consuming, that the allocation and aggregation process might lead to inaccuracies, and that this was not the most satisfactory manner of proceeding if the major objective was to analyze the total costs of a program rather than the costs of offering courses in a department. Also, the approach did not lend itself to the development of a methodology that could be employed for program planning purposes or a useful management information system.

Since the major source of costs in higher education is related to the faculty, it was determined to proceed with the program cost analysis by determining the faculty resources required to provide the curriculum to the students and the costs related to those faculty requirements. This was done in an effort to arrive at the average cost of the program per student per year. From this end point, information regarding the cost of specific courses could be closely estimated if such information were desired.

The general overview of the elements and the flow of the program cost analysis that evolved as a result of this project may be seen by reference to Figure 3. There are four major elements in the analysis methodology identified as: program, student, faculty, and cost.

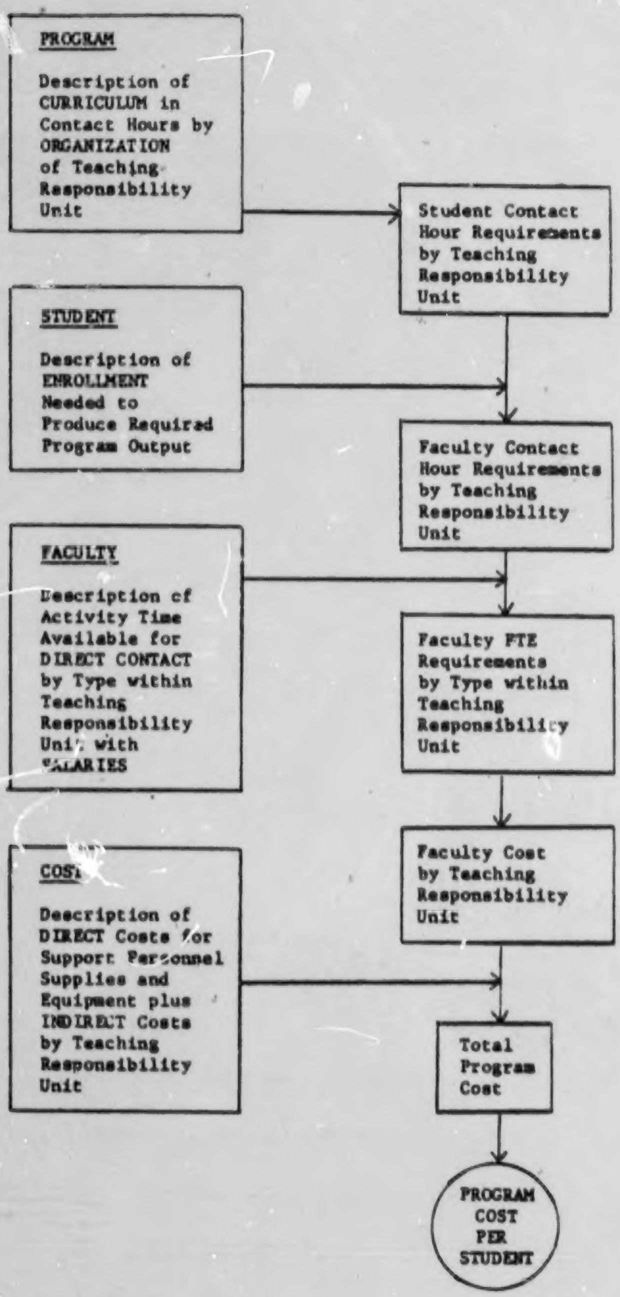
Each program is carefully described in terms of the organization of its curriculum, the departments responsible for teaching its courses, the number of credit hours as well as the modes of instruction and student group sizes associated with the various courses. Using these descriptions the student contact hour (SCH) requirements are identified and summarized and the resulting total student enrollment determined.

The student element is described in terms of the number of students in each entering class.

On the basis of the data derived from these two elements, the number of faculty contact hours (FCH) required to deliver the instruction to the students is ascertained.

The faculty element is carefully described. In each course mode, the type of faculty necessary to teach the faculty contact hours is determined. The faculty analysis and description also includes the organization of the faculty by type, the actual amount of direct contact hours each type provides and their defined availability for direct contact teaching. From this data the faculty full-time equivalents required to deliver the curriculum requirements for the program are ascertained. Faculty salary data by type is defined for each of the teaching responsibility units which supply instruction to the program being studied. Faculty costs for each of the units responsible for teaching is thereby determined and the relationship

Figure 3: PROGRAM COST ANALYSIS


PROGRAM Description of CURRICULUM in Contact Hours by ORGANIZATION of Teaching Responsibility Unit
STUDENT Description of ENROLLMENT Needed to Produce Required Program Output
FACULTY Description of Activity Time Available for DIRECT CONTACT by Type within Teaching Responsibility Unit with SALARIES
COST Description of DIRECT Costs for Support Personnel Supplies and Equipment plus INDIRECT Costs by Teaching Responsibility Unit
Student Contact Hour Requirements by Teaching Responsibility Unit
Faculty Contact Hour Requirements by Teaching Responsibility Unit
Faculty FTE Requirements by Type within Teaching Responsibility Unit
Faculty Cost by Teaching Responsibility Unit
Total Program Cost
PROGRAM COST PER STUDENT

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to the total cost is established. Other costs for the program are also determined for each of the areas providing support services to the program. By adding the faculty costs and other costs associated for the various teaching responsibility units, total costs are accumulated. These costs are then divided by the total enrollment for each program to ascertain the total cost per student.

The methodology also allows for the determination of the average cost per student per year for each of the four years of the program. The detailed steps in the program cost analysis methodology are shown in Figure 4.

These calculations were completed for the ten cost study programs. Formats used for data presentation may be seen in Appendix H. For a complete description of each of these steps as applied to the "Actual" Ten Cost Study Programs one may wish to refer to Appendix I.

In order to illustrate the application of the methodology for planning purposes and for the development of the current manuscript, for each of the programs there also was a "theoretical" cost construction developed. This was accomplished utilizing the data collected and some additional assumptions which are outlined in detail in Appendix J. These constructions provide a response to "what if" types of questions. The "theoretical" assumptions which were used allow one to take the "actual" data for the division offering the program and (1) by altering the assumptions regarding the teaching responsibility of the full-time and part-time faculty members for both didactic and clinical components of the program and (2) by making changes in the number of students enrolled in the program, to construct the "theoretical" costs of a modified program.

Figure 4: Program Cost Analysis

PROGRAM: STEP 1. Program Description
Describe the Organization of the Program
by Teaching Responsibility Units (TRU) and Faculty
Types (FT-PT)

Curriculum Description
Describe the Calendar Structure, (YR)
Curriculum Structure, Faculty-Student Interactions, and
Group Size/Instructional Modes (GS)
Describe the Program Curriculum by
Course Title and Credits by Academic Session by Year
Determine Student Contact Hours (SCH) per Course
by Group Size/Instructional Mode (GS)
Identify Teaching Responsibility Unit (TRU) for each course

STEP 2. Student Contact Hour Requirements (SCH)
Summarize Curriculum Contact Hours
by Group Size by Teaching Responsibility Unit

STUDENT: STEP 3. Enrollment Description (SN)
Define Student Number per Entering Class (S) and Total Enrollment (SN)

FACULTY: STEP 4. Faculty Contact Hour Requirements (FCH)
Calculate Factor for Number of Faculty (FSM) Required by
Group Size
$FSM = S/GS$
Calculate Faculty Contact Hours Required for Direct
Student Contact Hours (DC) portion of Student Contact
Hours by Group Size by Teaching Responsibility Unit
$FCH = SCH \times DC \times FSM$

STEP 5. Faculty Organization
Determine Amount of Faculty Contact Hours by Group Size to
be provided by Faculty Type by Teaching Responsibility Unit

STEP 6. Availability for Contact (FA)
Define Faculty Activities and Availability to Provide Direct
Contact Hours by Faculty Type by Teaching Responsibility Unit

STEP 7. FTE Requirements (FTE)
Determine Faculty FTE Requirements
by Faculty Type by Teaching Responsibility Unit
$FTE = FCH/FA$

STEP 8. Salaries (FS)
Determine Average Salaries
by Faculty Type by Teaching Responsibility Unit

COST: STEP 9. Faculty Cost (FC)
Calculate Cost by Faculty Type by Teaching Responsibility Unit
$FC = FTE \times FS$

Determine Relationship (FP) of Faculty Cost to Total Cost (TC)
$FP = FC/TC$

STEP 10. Other Cost (OC)
Determine Other Cost by Teaching Responsibility Unit
by Description or Calculation
$OC = FC \times (1.0/FP)$

STEP 11. Total Cost (TC)
Calculate Total Cost by Teaching Responsibility Unit and
Accumulate All Costs
$TC = FC + OC$

COST PER STUDENT: STEP 12. Cost per Student (C/S)
Calculate Cost per Student for Total Program Costs (TP),
Average Cost per Student per Year (Y)
$TP = TC/S$
$Y = TC/SN$

The results of the application of the program cost analysis to the Ten Cost Study Programs are presented in the following chapters. Hopefully this will allow the reader to see the application of the methodology for planning purposes and also see how the related information functions as an excellent management information system. By allowing all of the involved faculty to review the information they can help select from projected alternatives when hard decisions must be made.

D. Program Cost Analysis and Interpretation and Presentation

This document utilizes the results of the initial grant study and moves into an additional and important phase, namely the interpretation and presentation of the original data and the various constructed analyses. Additionally, an attempt has been made to evaluate and compare results of both the program and element analysis which has allowed for some useful generalizations. These generalizations were not conceived as a part of the original cost study project but have largely resulted from subsequent discussions, evaluation, and analysis of the original and subsequent data and information developed.

III. Results and Discussion

The results of the completion of the methodology reported in the previous chapter may be divided into three parts as follows:

1. Programs Analysis
2. Elements Analysis
3. Program Cost Procedures for Analysis and Construction.

In this chapter the programs and elements analysis are presented and discussed. Chapter Four contains the conclusions of the cost study and comments on the program cost methodology.

A. Programs

Data collected from the following were used in the program cost analysis methodology procedures:

1. Curriculum Descriptions
   Didactic Questionnaire
2. Student Enrollment Analysis
3. Faculty Activity Analysis
   - OSU SAMP Faculty
   - Clinical Preceptors
4. Cost Determinations.

The results of the "actual" analysis and the "theoretical" construction for each of the Ten Cost Study programs follows. A detailed description of the program cost analysis procedure is presented with the results of the Medical Dietetics program.

PROGRAM COST ANALYSIS: PROCEDURE EXPLANATION

The Medical Dietetics curriculum has been chosen to explicate the analytical procedure which was developed in this cost study analysis. It was determined that this program was representative of the ten programs. It had a large faculty size and student enrollment. The curriculum had a complex mix of courses from divisions in the School of Allied Medical Professions, various departments in the basic medical sciences and the general university. The clinical and didactic experiences are integrated and professional courses are distributed throughout the four years.

Therefore, it appeared that if the methodology allowed one to sort out these complex interactions and establish the costs and if it could be described lucidly to the reader, it would serve as a good example.

The organizational setting of the Medical Dietetics program (see Figure 1) and the other allied health programs at The Ohio State University and their interrelationships with the rest of the university and the community (see Figure 2) were developed to assist the reader in understanding the general environment in which this program resides.

A systematic sketch of the program cost analysis methodology has been outlined (See Figure 3) in which the major elements are briefly described. They are as follows:

PROGRAM: Description
: Curriculum Description
: Student Contact Hours
STUDENT: Enrollment
FACULTY: Student Ratios
: Contact Hours
: Availability
: Requirements
COST : Total Program
: Total Program: Per Student per Year.

The program cost analysis steps and the procedure were outlined in Figure 4 and should make an easy reference for the reader in proceeding through the detailed description of the Medical Dietetics analysis. The data collection techniques were described in the methodology section. The detailed format used for arranging the data appears in Appendix H. The display of the detailed data for Medical Dietetics may be seen by reference to Appendix K.

Following is the Step by Step analysis for the Medical Dietetics program organized by major elements.

PROGRAM: Description

Step 1 in the analysis is the description of the organization of the program curriculum by Teaching Responsibility Unit and faculty types, both full-time and part-time.

Medical Dietetics is a coordinated undergraduate program that combines the theoretical aspect of the didactic curriculum with the practical, applied aspects of the clinical curriculum and includes Medical Dietetics faculty members from the School of Allied Medical Professions accompanying students into the clinical setting at the university hospitals. It also includes the contributed time of part-time faculty members from the hospital's service department. The clinician's primary duty is patient care, but they also work with the students in this program. The program utilizes some additional course work taught by other faculty members within the School of Allied Medical Professions as well as other faculty members in the basic medical sciences and the general university.

The Medical Dietetics division of The Ohio State University School of Allied Medical Professions is the primary department offering this program. The Teaching Responsibility Units (TRU's) are designated as follows:

TRU #1 Medical Dietetics, Primary Department
TRU #2 Other Departments in the School of Allied Medical Professions (SAMP)
TRU #3 Basic Medical Sciences departments in the Academic Health Center
TRU #6 Departments in the General University

PROGRAM: Curriculum Description

The reader may wish to refer to Appendix B where the specific course requirements for the preprofessional and professional years of the Medical Dietetics program are outlined. It may be noted in viewing the curriculum that there is one preprofessional year suggested with the following three years in the Medical Dietetics division. Students in this program also enroll for an extra quarter between the Junior and Senior years. For the purpose of this analysis, this quarter was added to the fourth year.

By reference to Appendix K, Page 1, a detailed display of the data for the autumn quarter of the Freshman year may be seen. The courses which were listed in Appendix B for Medical Dietetics are arranged by academic quarter with the appropriate Teaching Responsibility Units noted, the credit hours for each course listed, and the number of student contact hours by lecture, recitation, laboratory and clinic instructional modes displayed. On the second page of Appendix K, the Sophomore year courses are displayed with student contact hours per quarter by instructional mode and Teaching Responsibility Units. Continued on Pages 3 and 4 are the courses for the Junior and Senior year respectively.

As a part of Step 1, additional data on the group size in each of the instructional modes is required for each of the courses listed in the four years of this program. Each course is listed by title, academic credits and student contact hours by group size, by quarter, by year.

Once the data of Step 1 is collected and organized as shown, Steps 2, 3 and 4 are undertaken.

PROGRAM: Student Contact Hours

In Step 2 the scheduled student contact hour requirements are summarized by Teaching Responsibility Unit. The reference is Page 1 of the four pages for Steps 2 through 4 in Appendix K which is included here as Example 1.

In the series of totals for Step 2, the information regarding student contact hours is now organized by Teaching Responsibility Unit. Also listed is the total number of hours "offered" by Teaching Responsibility Unit, which in the case of Medical Dietetics is 2294 and the total number of hours "required" of each student in the program is 1677. The data gathered from the didactic questionnaire shows that some of the courses are offered more than once in this curriculum.

STUDENT: Enrollment

It should be noted that for Step 3 there are 99 students in the program, with an average of 25 students per class and four classes, one for each year. Enrollment is defined as the average number of students entering each class.

FACULTY: Student Ratios

For the Teaching Responsibility Units #3-6 the Faculty-Student Ratios or group size were defined based on course scheduling data. The detailed description appears in Appendix I, Step 4. They are summarized below:

Faculty-Student Group Size: Students per Faculty Member

Mode	TRU #3	#4	#6
Lecture	50	-	100
Laboratory	16	-	25
Clinic	-	1	-

For the Teaching Responsibility Units #1 and 2, the Faculty-Student ratios or group size were derived from the faculty contact hours

MEDICAL DIETETICS **Step 2-3-4: Page 1 of 4**

EXAMPLE 1

Step 3: Student Class Characteristics

99 Students in Program
25 Students per Class
4 Classes

Calculated Faculty-Student Ratios for Teaching Responsibility Unit 1:

Lecture:	**1-13**
Lab:	**----**
Clinic:	**1-6**

TRU #1: Medical Dietetics

Teaching Responsibility Unit	Course	Step 2: Curriculum Description: Summary — STUDENT CONTACT HOURS				Step 4: Faculty Requirements — FACULTY CONTACT HOURS			
		Lecture	Lab	Clinic	Quarter Total	Lecture	Lab	Clinic	Quarter Total
1	Medical Dietetics 201	15	--	--	15	17	--	--	17
1	Medical Dietetics 410	40	--	50	90	64	--	90	154
1	Medical Dietetics 411	30	--	--	30	39	--	--	39
1	Medical Dietetics 420	20	--	60	80	29	--	60	89
1	Medical Dietetics 521	40	--	50	90	63	--	200	263
1	Medical Dietetics 421	20	--	60	80	20	--	66	86
1	Medical Dietetics 522	40	--	50	90	47	--	200	247
1	Medical Dietetics 422	20	--	60	80	20	--	120	140
1	Medical Dietetics 523	40	--	50	90	100	--	200	300
1	Medical Dietetics 636	20	--	30	50	20	--	30	50
1	Medical Dietetics 637	47	--	120	167	61	--	600	661
1	Medical Dietetics 638	20	--	150	170	22	--	150	172
1	*Medical Dietetics 645*	*60*	--	*200*	*260*	*106*	--	*490*	596
1	Medical Dietetics 645	60	--	200	260	106	--	490	596
1	*Medical Dietetics 638*	*20*	--	*150*	*170*	*22*	--	*150*	*172*
1	*Medical Dietetics 637*	*47*	--	*120*	*167*	*69*	--	*600*	*669*
1	Medical Dietetics 646	60	--	195	255	124	--	990	1114
1	*Allied Medicine 693*	*20*	--	--	*20*	*20*	--	--	*20*
1	Allied Medicine 694.04	10	--	120	130	10	--	240	250
	Offered TOTAL	*629*	--	*1665*	*2294*	*959*	--	*4676*	*5635*
	Required TOTAL	482	--	1195	1677	742		3436	4178

TEACHING RESPONSIBILITY UNIT:
1 = Medical Dietetics
2 = Other SAMP
3 = Health Center
4 = Affiliated Clinics
5 = Other
6 = General University

PRESTIGE ELITE SCRIPT: **Required Courses**
ITALICIZED SCRIPT: ***Offered Courses***

identified in the didactic questionnaire divided by the average number of students per class. The values for Medical Dietetics appear in Appendix K and Example 1.

FACULTY: Contact Hours

When all of the courses are organized by Teaching Responsibility Unit with the curriculum described by mode of instruction and student contact hours summarized, the faculty contact hours can then be identified or calculated by course and mode. For the courses offered in the School of Allied Medical Professions, the actual faculty contact hours provided were obtained from the didactic questionnaire (see Appendix C).

For courses required in the basic sciences and the general university, the calculation method as outlined in Appendix I, Step 4 was used. The factor for faculty required by group size (FSM) is determined by dividing the class size by the group size. This factor represents the number of course sections which are required to provide the student contact hours to the entire class. The faculty contact hours required for direct student contact by group size by TRU was then calculated by multiplying the student contact hours by the FSM factor. Appendix K shows that for the Medical Dietetics Division (TRU #1) the faculty contact hours offered total 5635, while the required number is 4178.

Faculty contact hours for the other Teaching Responsibility Units are outlined on succeeding pages in Appendix K. These data are for

TRU #2 (other divisions within the School of Allied Medical Professions), TRU #3 (the basic medical science courses offered by departments in the health center), and TRU #6 (courses offered by other departments within the general university). Data by Teaching Responsibility Unit are summarized on Page 4 of 4 for Steps 2, 3, and 4 in Appendix K.

Data for the Medical Dietetics for Steps 5, 6, 7, 8 and 9 are displayed on a single page in Appendix K and here as Example 2. Again it is suggested that the reader follow the flow chart in Figure 3 and the specific methodology outlines in Appendix I to see the relationship of the numbers presented in the tables and the analytical methodology.

In Step 5 the faculty organization is set forth. The amount of faculty contact hours by instructional mode to be provided by each faculty type by Teaching Responsibility Unit may be seen. For example, Medical Dietetics, which is TRU #1, is responsible for providing 83% (796 hours) of the faculty contact hours provided by the full-time faculty members in the lecture mode. Moving across the columns one may see that the full-time faculty members in TRU #1 are responsible for providing 48.7% (2280 hours) of the total hours in the clinic mode. Similar detailed descriptions of the faculty structure and faculty contact hours by instructional mode are described for the other Teaching Responsibility Units. Totally this results in 6568 faculty contact hours offered for the program.

FACULTY: Availability

Once the determination has been made as to the amount of faculty contact hours by instructional mode that is to be provided by each

EXAMPLE 2

Steps 5-6-7-8-9: Page 1 of 1

Medical Dietetics Analysis

Step 5: Faculty Structure					Step 6: Faculty Availability for contact			Step 7:	Step 8:	Step 9:
	FACULTY	CONTACT	HOURS							
TEACHING UNIT	LECTURE	LAB	CLINIC	TOTAL	YEAR LENGTH	HOURS OF DIRECT CONTACT	% OF TOTAL HOURS	FACULTY FTE	AVERAGE SALARY	FACULTY COST
1 MEDICAL DIETETICS										
ON-SITE:										
Full-time	796		2280	3076	1920	280	14.6%	11.0	14,818	162,998
Part-time	---	---	----	----	----	---	----	---	------	-------
Grad.Teach.Assoc.	37	---	516	553	1920	553	28.8%	1.0	9,360	9,360
ON-SITE TOTAL	833	---	2796	3629						172,358
Guest Lecturers	126	---	----	126	1920	1920	100%	.1	14,000	1,400
Clinical Faculty	---	---	1880	1880	1920	1920	100%	1.0	10,000	10,000
UNIT TOTAL	959	---	4676	5635				13.1		183,758
2 SAMP	14	---	----	14	1920	442	23.0%	0	16,544	0
3 HEALTH CENTER	111	156	----	267	1920	442	23.0%	0.6	21,276	12,766
6 GENERAL UNIVERSITY	372	280	----	652	1440	432	30.0%	1.5	17,925	26,888
PROGRAM TOTAL	1456	436	4676	6568				15.2		$223,412

faculty type by Teaching Responsibility Unit, then one must determine the availability of faculty for contact. Availability for contact is determined in Step 6. It may be noted from the Medical Dietetics analysis data that the average length of the academic year is 48 weeks (12 weeks per quarter, four quarters per year) of 40 hours per week for a total work available time of 1920 hours. These are the average available hours from faculty members in the Medical Dietetics division, from the clinical faculty and from the other faculty members in the School of Allied Medical Professions as well as faculty members in the health center. These faculty members are considered to have 12 month appointments. For faculty in TRU #6, the general university, the length of the work year is less. Most of these faculty members are on 9 month contracts. The total length of the academic year for these faculty members is 36 weeks (12 weeks per quarter, three quarters per year) of 40 hours per week for a work available time of 1440 hours.

The percent of direct contact for Teaching Responsibility Units #2-6 are described in detail in Appendix I, Step 6 and summarized in Example 2.

For Medical Dietetics the actual full-time faculty count for 1974-75 was known to be 11. In dividing the faculty contact hours of 3076 by 11, this calculation indicates that the average faculty member has 280 hours of direct contact responsibility. The 280 hours divided by 1920 hours converts to 14.6% total time available for direct contact.

FACULTY: Requirements

For the Primary Department TRU #1, the actual faculty available is known.

For the other TRU's, Step 7 was completed by dividing the Faculty Contact hours assigned in Step 5 by Faculty Type within TRU, divided by the Faculty Availability for Contact defined in Step 6. The result is the full-time equivalent faculty requirements. In Step 8 the average salary for each faculty type within Teaching Responsibility Unit is identified.

COST: Total Program

In Step 9 the faculty full-time equivalents stated in Step 7 are multiplied by the average salary of Step 8 to determine the total faculty cost for each of the Teaching Responsibility Units. As indicated on the flow chart (Figure 4), in Step 9 the relationship of faculty cost to total cost may be determined by either description or calculation. For specific details refer to the methodology in Appendix I. In Appendix K in the table which outlines Steps 9, 10, 11 and 12, (shown here as Example 3) the listing of faculty costs for each of the Teaching Responsibility Units may be seen. Total faculty cost for the Medical Dietetics program was $223,412.

Reference should be made to the specific analytical description of Step 10 (see Appendix I) in order to ascertain the method by which other costs were determined for each of the Teaching Responsibility Units. This step may also be completed by description or by calculation as noted in the outline for Step 10 in Figure 4. For Medical Dietetics the Other cost includes support personnel, space, operating budget, School of Allied Medical Professions administration, College of Medicine administration, and the University Central Administration. When these subunits are summarized, the total other cost for the on-site total for Medical Dietetics was $168,148.

In Step 11 the Faculty Cost of Step 9 is added to the Other Cost of Step 10 to produce the Total Cost. For the primary department, the Total Cost equals $324,546. In general this process is repeated for each of the Teaching Responsibility Units, the summation of which results in a program total cost, (Step 11) which equals $439.009, (see Example 3).

COST: Total Program: Per Student per Year

In Step 12 dividing the Total Cost by the number of students produces the "Total Program Cost per student" of $17,734. Dividing this cost by the number of years produces the average cost per student per year of $4,433.

Theoretical Construction: Assumptions and Effects

After the method was applied to the "actual" data, the development of a "what if" analysis identified as the "theoretical" construction was calculated. The assumptions used in the "theoretical" construction are presented in Appendix J. The Medical Dietetics "theoretical" construction appears in Appendix K in Step 15. Appendix K also contains the calculations for the Yearly Cost Analysis for Medical Dietetics identified as Step 16. The method for calculating this step appears in Appendix J.

In order to present the results of the program cost analysis in its "actual" and "theoretical" form a summary table format was developed, the outline of which appears in Example 4. The calculations for Total Program Cost are not shown on the summary charts. They appear in full detail for each program in Appendix L.

EXAMPLE 3

MEDICAL DIETETICS ANALYSIS

		Step 9	Step 10: Other Costs							Step 11	Step 12
TEACHING RESPONSIBILITY UNIT		FACULTY COSTS	SUPPORT PERSONNEL	SPACE	SUPPLIES & EQUIPMENT	SAMP ADMIN.	MED SCHOOL ADMIN.	CENTRAL ADMIN.	TOTAL OTHER COSTS	TOTAL COST	COST PER STUDENT n=99
1	MEDICAL DIETETICS										
	On-Site Total	172,358	30,835	14,897	16,743	12,756	34,326	42,631	152,188	324,546	3,278
	Guest Total	1,400							1,960	3,360	34
	Clinical Faculty Total	10,000							14,000	24,000	242
	UNIT TOTAL	183,758							168,148	351,906	3,554
2	SAMP	0							0	0	0
3	HEALTH CENTER	12,766							17,872	30,638	309
6	GENERAL UNIVERSITY	26,888							29,577	56,465	570
PROGRAM TOTAL		$223,412							$215,597	$439,009	$4,433

EXAMPLE 4

OSU:SAMP: Cost Study:
Program Cost Analysis: Actual and Theoretical

Division: (One of Ten)

PROGRAM: Student Contact Hours are presented by Teaching Responsibility Units (#1-6) listing Instructional Modes in TRU #1 with summary Totals indicated.

STUDENT: Enrollment is displayed by Average Class size with the Total student number for the program.

FACULTY: Faculty-Student Ratios are displayed for the Primary Departments (TRU #1 & 4) Instructional Modes.

: Faculty Contact Hours are presented by Teaching Responsibility Units (#1-6) with details displayed by Faculty Types for the Primary Department (TRU #1). For the Full-Time Faculty in TRU #1 the data is shown by Instructional Mode. Program totals are also provided.

: Faculty Availability is displayed for the Faculty Types within the Primary Department (TRU #1).

: Faculty Requirements are presented by Teaching Responsibility Units (#1-6) with detail by Faculty Type for (TRU #1). Totals are indicated for the Primary Department.

: Faculty-Student Ratio for the total program is displayed.

COST PER STUDENT: Total Program: Cost Per Student Per Year data is displayed presenting the Average cost by Teaching Responsibility Units (#1-6) with the details displayed by Faculty Type for the Primary Department (TRU #1). The Cost per Student is also presented for each year of the program and a Total Program Cost per Student presented.

SAMPLE FORM:

OSU:SAMP: Cost Study:
Program Cost Analysis: Actual and Theoretical

Division: ____________________

PROGRAM: Student Contact Hours
- TRU #1 Lecture
  - Laboratory
  - Clinic
  - Total
- 2
- 3
- 4
- 6
- Program Total

STUDENT: Enrollment
- Class Average
- Program Total

FACULTY: Faculty-Student Ratios
- TRU #1 Lecture
  - Laboratory
  - Clinic
- TRU #4 Clinic

: Faculty Contact Hours
- TRU #1 Full-Time
  - Lecture
  - Laboratory
  - Clinic
  - Total
  - Part-Time
  - Total TRU #1
- TRU #2
- TRU #3
- TRU #4
- TRU #6
- Program Total

: Faculty Availability
- TRU #1 Full-Time
  - Part-Time

: Faculty Requirements
- TRU #1 Full-Time
  - Part-Time
  - Total
- TRU #2
- TRU #3
- TRU #4
- TRU #6
- Program Total

: Faculty-Student Ratio
- Program Total

COST PER STUDENT: Total Program Per Student Per Year Average
- TRU #1 Full-Time
  - Part-Time
  - Total
- TRU #2
- TRU #3
- TRU #4
- TRU #6
- Program Total

By Year
- 1
- 2
- 3
- 4

Total Program Cost per Student

For the continuation of the discussion of the Medical Dietetics Program, the summary table form is used. The other nine programs for which the analysis was completed will have the results of the analysis shown in the same summary format.

MEDICAL DIETETICS

PROGRAM: Description

Medical dietitians are specialists in the dietary care of patients in hospitals and clinics. As members of the patient's care team, they strive to improve and maintain the nutritional status of the patient and to help the person understand and adjust to his diet. Medical dietitians plan meals that are acceptable to the patient and at the same time that meet dietary needs. They are specialists in educating the patient, the student in nutrition, and the associated members of the professional team.

Although the Medical Dietetics program is designed to educate men and women for the nutritional care of patients in hospitals and clinics, medical dietitians may serve professionally in other areas such as restaurants, college food services and the armed forces. Municipal, state and federal departments of health all provide an opportunity for medical dietitians to apply the science of nutrition for the public's benefit.

Prospective medical dietitians should have an interest in science, food and people. The curriculum is science oriented and includes chemistry, biology and physiology. The management aspect of food services and hospitals also is studied. Medical dietetics students have many opportunities to combine theory with clinical experiences as a part of their professional courses.

PROGRAM: Curriculum Description

The professional and preprofessional portions of the Medical Dietetics curriculum are detailed in Appendix B.

The cost methodology was applied to the Medical Dietetics curriculum step by step. The result is represented by the collection of data regarding student contact hour requirements, faculty contact hour requirements, faculty full-time equivalent requirements, faculty cost, and both direct and indirect other cost for this program. The complete results of the "actual" analysis is shown in Table 1.

PROGRAM: Student Contact Hours: Actual

For Medical Dietetics the full-time faculty members in TRU #1 are responsible for 482 student contact hours in the lecture mode and 1195 in the clinic mode for a total of 1677 hours. TRU #1 provides 51% of the total student contact hours in the program. Other divisions in the School of Allied Medical Professions (TRU #2) supply 30 student contact hours which represents 1% of the total. The basic medical sciences (TRU #3) are responsible for providing 320 student contact hours or 10% of the total. The general university (TRU #6) was found to support 1250 student contact hours. This represented 38% of the total student contact hours of 3277.

STUDENT: Enrollment: Actual

As was noted earlier there were 25 students in a class and the total program enrolled 99 students in the year of the study.

FACULTY: Faculty-Student Ratios

The faculty-student ratio for the lecture mode in TRU #1 was determined to be 1-13. In the clinic, the faculty-student ratio was 1-8.

Division: Medical Dietetics

		ACTUAL	
PROGRAM: Student Contact Hours		#	%
	TRU #1 Lecture	482	15
	Laboratory	-	-
	Clinic	1195	36
	Total	1677	51
	2	30	1
	3	320	10
	4	-	-
	6	1250	38
	Program Total	3277	
STUDENT: Enrollment			
	Class Average	25	
	Program Total	99	
FACULTY: Faculty-Student Ratios			
	TRU #1 Lecture	1-13	
	Laboratory	-	
	Clinic	1-6	
	TRU #4 Clinic	-	
: Faculty Contact Hours		#	%
	TRU #1 Full-Time		
	Lecture	796	12
	Laboratory	-	-
	Clinic	2280	35
	Total	3076	47
	Part-Time	2559	39
	Total TRU #1	5635	86
	TRU #2	14	0
	TRU #3	267	4
	TRU #4	-	-
	TRU #6	652	10
	Program Total	6568	
: Faculty Availability			
	TRU #1 Full-Time		14.6
	Part-Time		100.0
: Faculty Requirements		#	%
	TRU #1 Full-Time	11	72
	Part-Time	2.1	14
	Total	13.1	86
	TRU #2	0	0
	TRU #3	.6	4
	TRU #4	-	-
	TRU #6	1.5	10
	Program Total	15.2	
: Faculty-Student Ratio			
	Program Total	1-7	
COST PER STUDENT:	Total Program Per Student Per Year Average	$	%
	TRU #1 Full-Time	3278	74
	Part-Time	276	6
	Total	3554	80
	TRU #2	0	0
	TRU #3	309	7
	TRU #4	-	-
	TRU #6	570	13
	Program Total	4433	
	By Year	$	%
	1	1370	8
	2	1650	9
	3	2918	16
	4	11,788	67
	Total Program Cost per Student	17,734	

FACULTY: Contact Hours: Actual

In the lecture mode the full-time faculty members in the division of Medical Dietetics were responsible for delivering 796 faculty contact hours which represented 12% for the total faculty contact hours for the program (6568). These same faculty members supplied 2280 (35%) faculty contact hours in the clinic mode for a total of 3076 faculty contact hours in TRU #1. Part-time faculty members contributed an additional 2559 (39%) of the faculty contact hours in TRU #1. Total faculty contact hours in Medical Dietetics (5635) represented 86% of the total faculty contact hours required for this curriculum. An additional 14 hours were provided by TRU #2 (other divisions in the School of Allied Medical Professions). This represented less than 1% of the total. The basic medical science faculty (TRU #3) provided 267 hours (4%) and the faculty in the general university (TRU #6) provided 652 faculty contact hours or 10% of the total.

FACULTY: Availability: Actual

As noted earlier, the full-time faculty members in TRU #1 were available 14.6% of their time for direct contact. Part-time faculty members were considered to be available 100% of their time.

FACULTY: Requirements: Actual

For the Medical Dietetics curriculum, 11 full-time faculty members were available in TRU #1. Two and one tenth FTE's of part-time faculty members were also utilized. The total faculty requirements for Medical Dietetics were 13.1 FTE's which represented 86% of the faculty requirements for the program. In TRU #2 which supplied only 14 faculty contact hours requires less than 0.1% of a full-time equivalent or essentially 0 as shown in Table 1. TRU #3 provided 0.6 FTE's of faculty time and TRU #6 added 1.5. The total faculty requirements for the program were 15.2 FTE's. For the entire program the overall faculty-student ratio was shown to be 1-7.

COST: Total Program: Actual

The Total cost associated with the Medical Dietetics program as actually offered in 1974-75 was $439,009. Faculty cost amounted to $223,412 with Other Cost of $215,597. The detailed analysis of the Total Cost appears in Appendix L.

COST: Total Program: Per Student Per Year: Actual

The cost per student per year for this program was shown to be $4,433. This was composed of $3,278 for the full-time faculty in Medical Dietetics, part-time faculty members added $276 to a total for this Teaching Responsibility Unit of $3,554 or 80% of the total cost. The amount of faculty contact hours contributed by TRU #2 was so small as to be essentially zero. The basic medical sciences (TRU #3) added $309 to the cost or 7% of the total. TRU #6 added $570 or 13%.

The cost per student per year distributed over the four years of the program provides some rather striking results. These costs are from the Freshman through Senior year respectively, $1,378, $1,650, $2,918 and $11,788. The latter figure represents 67% of the total cost of the four year program which was $17,734 per student. Obviously the design of the curriculum was such that the major portion of faculty time and the low faculty-student ratios reside in the fourth year, thus driving the cost to higher levels in this year.

Theoretical Construction: Assumptions and Effects

As with each of the subsequent programs a "theoretical" analysis was performed on the data using several assumptions. The results are displayed in Table 2. For this program it was assumed that the "theoretical" construction would be completed with an enrollment of 24 students per class with a total of 96 in the program and that the faculty-student ratios would be significantly changed from the "actual." For TRU #1 in the lecture mode it was assumed that all 24 students could be accommodated in a single lecture, thus the ratio of 1-24 was used. In the clinic mode the faculty-student ratio was set at 1-8.

A major change in the assumptions regarding faculty availability was made. The faculty for the "theoretical" analysis was assumed to be available up to 30% of their time for direct contact. This is nearly twice that shown to be the case in the "actual" analysis. With the utilization of actual full-time faculty members, the maximum availability was 23.9%. The part-time faculty were assumed to be available 75% of their time for direct contact with 25% additional so that these faculty members could spend time preparing for their direct contact. It also was assumed that the full-time faculty members would be responsible for delivering only 25% of the clinical contact hours. This represented a significant reduction from what had been ascertained in the "actual" analysis.

The change in faculty availability and the change in faculty-student ratios makes a significant difference in the faculty contact hours being delivered by the full-time faculty members in Medical Dietetics. This change is from 796 faculty contact hours to 482.

Table 2
OSU:SAMP: Cost Study:
Program Cost Analysis: Actual and Theoretical

Division: Medical Dietetics

	ACTUAL		THEORETICAL	
PROGRAM: Student Contact Hours	#	%	#	
TRU #1 Lecture	482	15		
Laboratory	-	-		
Clinic	1195	36		
Total	1677	51		
2	30	1		
3	320	10		
4	-	-		
6	1250	38		
Program Total	3277			
STUDENT: Enrollment				
Class Average	25		24	
Program Total	99		96	
FACULTY: Faculty-Student Ratios				
TRU #1 Lecture	1-13		1-24	
Laboratory	-		-	
Clinic	1-6		1-8	
TRU #4 Clinic	-		-	
: Faculty Contact Hours	#	%	#	%
TRU #1 Full-Time				
Lecture	796	12	482	10
Laboratory	-	-	-	-
Clinic	2280	35	897	18
Total	3076	47	1379	28
Part-Time	2559	39	2688	54
Total TRU #1	5635	86	4067	82
TRU #2	14	0	15	0
TRU #3	267	4	256	5
TRU #4	-	-	-	-
TRU #6	652	10	616	13
Program Total	6568		4954	
: Faculty Availability				
TRU #1 Full-Time		14.6		23.9
Part-Time		100.0		75.0
: Faculty Requirements	#	%	#	%
TRU #1 Full-Time	11	72	3	43
Part-Time	2.1	14	1.9	28
Total	13.1	86	4.9	71
TRU #2	0	0	0	0
TRU #3	.6	4	.6	9
TRU #4	-	-	-	-
TRU #6	1.5	10	1.4	20
Program Total	15.2		6.9	
: Faculty-Student Ratio				
Program Total	1-7		1-14	
COST PER STUDENT: Total Program Per Student Per Year				
Average	$	%	$	%
TRU #1 Full-Time	3278	74	1111	41
Part-Time	276	6	704	26
Total	3554	80	1815	67
TRU #2	0	0	0	0
TRU #3	309	7	319	12
TRU #4	-	-	-	-
TRU #6	570	13	549	21
Program Total	4433		2683	
By Year	$	%	$	%
1	1378	8	1333	13
2	1650	9	1645	15
3	2918	16	2492	23
4	11,788	67	5263	49
Total Program Cost per Student	17,734		10,733	

In the case of the clinic, the full-time faculty members were now responsible for only 897 faculty contact hours rather than 2280. Totally the full-time faculty members are responsible for 1379 faculty contact hours rather than 3076. This reduction again results from a change in faculty-student ratios and a major change in the assumption about the proportion of clinical hours to be delivered by the full-time faculty members. Even with the change in the assumption regarding the availability of part-time faculty members, the change in faculty-student ratios retained the faculty contact hours provided by this group of individuals at roughly the same level. It was 2559 in the "actual" analysis and it is 2688 in the "theoretical" analysis. Total faculty contact hours provided by full-time faculty members in TRU #1 decreases from 5635 in the "actual" analysis to 4067 in the "theoretical." Faculty contact hours for TRU #2, 3 and 6 remain essentially the same. It is important to note that there is a major reduction in the faculty contact hours required for the total program. In the "actual" analysis this total was 6568 and in the "theoretical" it is 4954. The availability of full-time faculty in the Medical Dietetics division was increased from 14.6% in the "actual" analysis to 23.9% in the "theoretical" construction.

With the assumptions that had been made previously there is a major change in the faculty requirements for the Medical Dietetics program. The full-time faculty members in TRU #1 dropped from 11 to 3 FTE's. Part-time faculty members dropped from 2.1 to 1.9 FTE's. The total for TRU #1 dropped from 13.1 to 4.9 FTE's. The faculty requirements for TRU #2, #3 and #6 remain essentially unchanged. The total for the program changes from 15.2 to 6.9 FTE's.

It is important to note that this program could be cost effective retaining 11 faculty members only with a major increase in student enrollment. With regard to the construction of the "theoretical" analysis, it would be very difficult to find three faculty members who possess the appropriate distribution of expertise to deliver the specialized content necessary in this curriculum. Therefore, it is more probable that the true ideal faculty number for this program lies someplace between 11 and 3 FTE's.

This faculty has employed team teaching which has been the major effect that changes the faculty-student ratio from 1-24 to 1-13 in the lecture mode. Team teaching may be very important in adding increased quality to the program if it is carried out effectively. Therefore, in terms of cost benefits it may be desirable; however, it might be important for the faculty members to substantiate the added quality that the team teaching may add to this program.

With the assumptions that have been made previously, the faculty-student ratio for the total program changes from 1-7 to 1-14 which obviously is more efficient. Whether it could be more effective with regard to the quality remains to be determined and this issue should lie with the faculty, for it is at the level of the faculty that the quality of any academic program is determined.

Assuming a constant level of quality with respect to students, as one reviews the data shown in Table 2, there is a significant reduction in the cost per student with the assumptions that have been made in the "theoretical" analysis. For full-time faculty members in Medical Dietetics the average cost per student decreases from $3,278 to $1,111. For the part-time faculty there is an increase in the cost from $276 to $704. The total average cost per student per year for TRU #1 declines from $3,554 to $1,815, a significant difference. Average cost per student per year for TRU #2 remains at essentially zero. For TRU #3 there is a slight increase from $310 to $319 and a slight decline in TRU #6 was noted. This decline was from $570 in the "actual" analysis to $549 in the "theoretical." The total average cost per student per year difference between the "actual" analysis and the "theoretical" analysis was $1,050. This resulted from the decline from $4,433 to $2,683.

The distribution of costs for the four year program changed markedly in the Senior year. The average cost per student per year for the Freshman through Senior year was determined in the "theoretical" analysis to be $1,333, $1,645, $2,492 and $5,263. Thus the total cost per student for the four year program was reduced from $17,734 to $10,733, a difference of $7,001 per student, over a four year program. As one can note from the review of the data the major change in cost resided in the Senior year. The major impact on this change came from the change in faculty-student ratios and faculty availability for direct contact.

It should be clear that the "theoretical" analysis cannot be used to determine with any accuracy on a real life basis the manner in which curriculum can be changed to reduce the cost and to maintain quality. Quality as noted earlier is determined by the faculty and truly should be their prerogative. However, it may be noted that in the case of this analysis the "theoretical" construction might be used by the faculty to review its curriculum and the impact and relationship of cost to structure of curriculum delivery. The faculty that is aware of this methodology and the data derived therefrom, might well make appropriate changes which could significantly reduce the cost of educating students while retaining quality. It might be suggested that any change, however, be accompanied by a carefully constructed evaluative instrument to be assured that the quality is either maintained or increased by this change, otherwise the continued high cost might well be justified.

SUMMARY:

The average cost per student per year for the total program in Medical Dietetics actually offered in 1974-75 was calculated to be $4,433 for an average class size of 25. These students are required to take 3277 contact hours during their four year program. Fifty-one percent of the curriculum was provided by the primary department which consisted of 11 full-time faculty plus 2.1 FTE of part-time faculty. An additional 0.6 FTE of faculty from the basic science departments and 1.5 FTE of faculty from the general university were required to offer the curriculum. The overall faculty-student ratio was 1-7.

CIRCULATION TECHNOLOGY

PROGRAM: Description

Circulation Technology (sometimes called extracorporeaol technology) is the application of technology in diagnosis, monitoring, support and processing of the patient's blood. Examples of its application are the heart lung by-pass in the support of the patient undergoing open heart surgery; circulatory support of the failing heart or lungs; use of the artificial kidney in the purification of blood; chemotherapy via the circulatory system; and heart catheterization and research instrumentation for the measurement of physiological status of the patient.

One of the major objectives of this program is to enable the graduate to expertly operate artificial organs, e.g., the heart-lung machine or the kidney dialysis unit, when this equipment assumes the function of the body's blood processing organs. The second objective is to educate the student to be able to utilize appropriate instrumentation and have appropriate skills and judgment to be capable of selecting the appropriate instrumentation techniques and procedures. It is also an objective of this program to develop the students' investigational and research skills to be able to evaluate new concepts, techniques and devices before their acceptance and implementation in clinical use.

Academic and didactic experiences are directed toward providing the student with a comprehensive understanding of the interrelationships between the circulatory system and the dimensions of instrumentation that are required to provide the optimum in patient care.

The major goal is to provide competent specialists who can bring the latest in engineering advances in areas of health technology to the patient at the bedside, in the operating room or in laboratory based activities.

PROGRAM: Curriculum Description

Entrance into the program requires that a student has completed prerequisites in mathematics, physics, chemistry and biological sciences and has completed two years of preprofessional college courses. At the successful completion of two years in the professional phase of the program a bachelor of science in allied health professions is awarded. In the case of students who have previously completed a baccalaureate degree, only the professional components of the curriculum are required and a certificate of completion is awarded. A more comprehensive outline of the curriculum for the division may be found in Appendix B. Listed are both the preprofessional and professional requirements.

As with Medical Dietetics, the cost methodology was applied to the Circulation Technology curriculum step by step. The result is represented by the collection of data regarding student contact hour requirements, faculty contact hour requirements, faculty full-time equivalent requirements, faculty costs and both direct and indirect other costs for this program. The complete results of the analysis for both the "actual" and "theoretical" analysis are shown in Table 3.

PROGRAM: Student Contact Hours: Actual

From the data provided it may be seen that the major portion of the students' curriculum is taught by the faculty of the Circulation Technology division. Fifty-three percent (1720 hours) of the student

Program Cost Analysis: Actual and Theoretical

Division: Circulation Technology

	ACTUAL		THEORETICAL	
PROGRAM: Student Contact Hours	#	%	#	
TRU #1 Lecture	540	17		
Laboratory	530	16		
Clinic	650	20		
Total	1720	53		
2	-	-		
3	150	5		
4	-	-		
6	1380	42		
Program Total	3250			
STUDENT: Enrollment				
Class Average	11		12	
Program Total	44		48	
FACULTY: Faculty-Student Ratios				
TRU #1 Lecture	1-6		1-12	
Laboratory	1-6		1-12	
Clinic	1-2		1-2	
TRU #4 Clinic	-		-	
: Faculty Contact Hours	#	%	#	%
TRU #1 Full-Time				
Lecture	970	16	540	10
Laboratory	884	15	530	10
Clinic	120	2	978	18
Total	1974	33	2048	38
Part-Time	3586	60	2922	54
Total TRU #1	5560	93	4970	92
TRU #2	-	-	-	-
TRU #3	51	1	56	1
TRU #4	-	-	-	-
TRU #6	326	6	356	7
Program Total	5937		5382	
: Faculty Availability				
TRU #1 Full-Time		25.7		26.6
Part-Time		100.0		75.0
: Faculty Requirements	#	%	#	%
TRU #1 Full-Time	4	60	4	58
Part-Time	1.8	27	2.0	29
Total	5.8	87	6.0	87
TRU #2	-	-	-	-
TRU #3	.1	1	.1	1
TRU #4	-	-	-	-
TRU #6	.8	12	.8	12
Program Total	6.7		6.9	
: Faculty-Student Ratio				
Program Total	1-7		1-7	
COST PER STUDENT: Total Program Per Student Per Year				
Average	$	%	$	%
TRU #1 Full-Time	2898	58	3118	57
Part-Time	1309	26	1558	29
Total	4207	84	4676	86
TRU #2	-	-	-	-
TRU #3	116	2	106	2
TRU #4	-	-	-	-
TRU #6	684	14	627	12
Program Total	5007		5409	
By Year	$	%	$	%
1	1512	7	1382	6
2	1025	5	938	4
3	6341	32	2344	11
4	11,154	56	16,976	79
Total Program Cost per student	20,032		21,640	

contact hours are in TRU #1. A relatively small percentage of the students' curriculum is taught by other departments in the basic medical sciences and forty-two percent of the student contact hours are delivered by other departments within the university.

STUDENT: Enrollment: Actual

Student enrollment per class is approximately 11 students with a total of 44 for the program on a four year basis.

FACULTY: Student Ratios: Actual

In reviewing the faculty-student ratios, it can be determined that the faculty of the Circulation Technology division tends to teach both lecture and laboratory settings using a faculty-student ratio of approximately 1-6. This ratio also may result from two instructors being present at the same time with the total class of 11 students. In the clinic the ratio tends to be 1 faculty member for 2 students. These data were obtained from the faculty's responses to the didactic instrument relative to each course taught during the 74-75 fiscal year.

FACULTY: Contact Hours: Actual

In examining the data on faculty contact hours it is striking to note that 60% (3586 hours) of the faculty contact hours are provided by part-time faculty members. This is not unusual if one considers the large number of clinical hours that the student must have in order to become proficient in the application of the knowledge received in the didactic component of the curriculum. "Volunteer" or "adjunct" faculty members provide a large portion of the instruction in the clinical setting. In view of the fact that so many contact hours (5560 hours) are delivered by the full-time and part-time faculty in the Circulation Technology division it is not surprising that 93% of the curriculum is actually delivered by this specific division. There remains only 1% (51 hours) that is provided by the other departments in the basic medical sciences and 6% (326 hours) which is supplied by the general university departments.

FACULTY: Availability: Actual

The full-time faculty members in Circulation Technology have available 25.7% of their time for direct contact with students while the part-time faculty members were considered to have 100% of their time available for direct contact. No time was considered necessary for preparation for the type of instructional activities undertaken by the part-time faculty.

FACULTY: Requirements: Actual

Four full-time faculty members in the division were available to offer the curriculum as it was delivered, with 1.8 FTE's of part-time faculty for a total of 5.8 FTE's in TRU #1. These faculty members provide 87% of the faculty requirements on a full-time equivalent basis. One-tenth of a full-time equivalent was required in the basic medical sciences and eight-tenths of an FTE was required from the rest of the University in order to provide the necessary course work for the students. The total faculty requirements for the program, therefore, were 6.7 full-time equivalents. The overall faculty-student ratio for the total program is one faculty member for each seven students enrolled.

COST: Total Program: Actual

The Total cost associated with the Circulation Technology program as actually offered in 1974-75 was $320,894. Faculty cost amounted to $150,085 with Other cost of $170,809. The detailed analysis appears in Appendix L.

COST: Total Program: Per Student per Year: Actual

The major cost of educating these students resides in TRU #1 where most of the instructional responsibility resides, with the average cost per student per year of $2,898 for full-time faculty, $1,309 for part-time faculty and a total cost per student per year for TRU #1 of $4,207. This figure represents 84% of the total average cost per student per year of the program. The cost on a per student per year basis for faculty members teaching in the basic medical sciences is $116 and the cost in the rest of the university represents $684 for a total average cost per student per year of $5,007. When the costs are distributed to each of the four years of a students' program the largest cost per student per year resides in the fourth year. The costs for the Freshman through Senior years are $1,512, $1,025, $1,634 and $11,154 respectively. The total cost to educate a student in this four year program is $20,032.

Theoretical Construction: Assumptions and Effects

What are the results of making some basic assumptions and applying the steps leading to calculations of the "theoretical" construction for this curriculum? Several assumptions were made in this regard. First the faculty-student ratios in TRU #1 for lecture and laboratory courses were changed from 1-6 to 1-12. This means that one faculty member can lecture to a group of 12 students and the presence of a second faculty member in the classroom during these lectures would not be necessary or does not occur. This change in faculty-student ratios makes a large difference in the faculty contact hours which would then be necessary. In reviewing data on the "theoretical" construction, one can see that the faculty contact hours for the lecture mode dropped from 970 to 540, and in the case of the laboratory from 884 to 530. In both cases the faculty contact hours represent 10% of those for the total program, a decrease in one case of 6% and in the other of 5%.

The second assumption regarding the "theoretical" construction is a significant change in the area of faculty contact hours by the Circulation Technology faculty in providing clinical experiences for the students. It is assumed that at least 25% of the clinical experience time should be provided by full-time faculty. If full-time faculty members are not involved in providing instruction in the clinical setting there is the likelihood that the didactic content will not be as relevant to the clinical experience and instruction as would be desired. Therefore in the "theoretical" construction 974 hours of clinical time would be provided by the full-time faculty members. This produces a concomitant drop in the hours which are then required of part-time faculty, from 3586 to 2922. As a result of making these changes the faculty requirements changed only slightly. It would require an addition of two-tenths FTE of part-time assistance for the Circulation Technology division (TRU #1).

It should be noted that an assumption underlying the above previously discussed changes was alteration in faculty availability. There is only a modest change in full-time faculty but for part-time faculty the change is from 100% availability to 75% availability. In essence this means it is assumed that the part-time faculty should have 25% of the total time that they devote to this program available to prepare for the teaching activities for which they are responsible. The other 75% of their time is for direct contact.

What are the effects of these suggested changes on the cost of the program? There is a modest cost increase of $1,608 per student for the total program. This change is due to the average salary effect (see Appendix I, Step 15) of slightly increasing the salary of part-time faculty, necessary to provide the program. There also is a slight increase in the cost of the full-time faculty which is related to their assumption of responsibility for teaching an increased proportion of the clinical courses.

The major portion of this cost increase resides in the fourth year of the curriculum where the percentage of the cost changes from 56% of the total to 79% of the total, with a concomitant shift downward in the Junior year from 32% to 11%. Changes in the Freshman and Sophomore years of 1% and 2% respectively are indicated.

SUMMARY

The average cost per student per year for the total program in Circulation Technology was calculated to actually be $5,007 for an average class size of 11 students. The students are required to take 3250 contact hours during their four years. Fifty-three percent of the curriculum was provided by the primary department consisting of four full-time faculty and 1.8 FTE's of part-time faculty. An additional nine-tenths FTE of faculty from the basic science departments and the general university were required to offer the curriculum. The overall faculty-student ratio was 1-7.

MEDICAL COMMUNICATIONS

PROGRAM: Description

Medical Communications is a relatively new area of undergraduate study. As a result of a need to bridge the gap between research discovery and its application to the care of patients, the program in Medical Communications was designed to educate specialists who could meet this goal. Graduates of the program are capable of demonstrating communications skills appropriate for careers in the health environment; (e.g., hospitals, universities, and a wide variety of health organizations and agencies) evaluating and improving communication processes; and assuming positions as teachers and administrators in this field.

These communications specialists assist scientists to keep themselves and others informed of current research; help teachers to transmit the increasing volume of knowledge to larger number of students in a more effective manner; assist practicing personnel to replace obsolete knowledge due to advances; and assist the consumer of health services to learn when, where and how to avail themselves of the best health care.

PROGRAM: Curriculum Description

The curriculum is divided into two phases. During the Freshman and Sophomore years, the student is expected to gain a basic understanding in communication theories and in a wide variety of media while completing other basic education requirements. This preprofessional phase may be accomplished at any accredited college or university.

For the professional phase of the program, the Junior and Senior years, the student is enrolled in the School of Allied Medical Professions for an advanced program of communications study within the medical environment. For those interested in communications within the health setting, this interdisciplinary program offers many opportunities for interaction. Upon completion of the program a bachelor of science degree in allied health professions is awarded. A more comprehensive outline of the curriculum may be found in Appendix B.

PROGRAM: Student Contact Hours: Actual

Using the program cost analysis methodology, the student contact hours, student enrollment data, student-faculty ratios, faculty contact hours, faculty availability, faculty requirements and a total program cost per student were calculated. The results of the analysis may be seen in Table 4. As one reviews the design of this curriculum it is obvious that a fairly large proportion of the student contact hours reside in courses taught by faculty in the general university. Of a total of 2285 student contact hours, 1445 hours (63%) are with the faculty of the general university, with 27% being with the faculty of the Medical Communications division. The lecture mode represents 240 student contact hours (11%), laboratory an additional 70 hours (3%) and the clinical portion comprises 300 hours (13%) for a total of 610 hours of contact with the division's faculty. One hundred and forty student contact hours (6%) are received from faculty of other divisions in the School of Allied Medical Professions and an additional 90 hours (10%) are using the Basic Medical Sciences faculty.

Table 4

OSU:SAMP: Cost Study:
Program Cost Analysis: Actual and Theoretical

Division: Medical Communications

	ACTUAL		THEORETICAL	
PROGRAM: Student Contact Hours	#	%	#	
TRU #1 Lecture	240	11		
Laboratory	70	3		
Clinic	300	13		
Total	610	27		
2	140	6		
3	90	4		
4	-	-		
6	1445	63		
Program Total	2285			
STUDENT: Enrollment				
Class Average	15		16	
Program Total	61		64	
FACULTY: Faculty-Student Ratios				
TRU #1 Lecture	1-9		1-16	
Laboratory	1-7		1-8	
Clinic	1-1		1-1	
TRU #4 Clinic	-		-	
: Faculty Contact Hours	#	%	#	%
TRU #1 Full-Time				
Lecture	390	12	240	4
Laboratory	40	1	140	2
Clinic	-	-	1200	21
Total	430	13	1580	27
Part-Time	2233	68	3600	63
Total TRU #1	2663	81	5180	90
TRU #2	87	3	57	1
TRU #3	65	2	70	1
TRU #4	-	-	-	-
TRU #6	455	14	485	8
Program Total	3270		5792	
: Faculty Availability				
TRU #1 Full-Time		7.5		27.4
Part-Time		100.0		75.0
: Faculty Requirements	#	%	#	%
TRU #1 Full-Time	3	54	3	44
Part-Time	1.2	21	2.5	36
Total	4.2	75	5.5	80
TRU #2	.2	4	.1	1
TRU #3	.1	2	.2	3
TRU #4	-	-	-	-
TRU #6	1.1	19	1.1	16
Program Total	5.6		6.9	
: Faculty-Student Ratio				
Program Total	1-11		1-9	
COST PER STUDENT: Total Program Per Student Per Year				
Average	$	%	$	%
TRU #1 Full-Time	1687	54	1796	43
Part-Time	561	18	1497	36
Total	2248	72	3293	79
TRU #2	130	4	61	1
TRU #3	84	3	160	4
TRU #4	-	-	-	-
TRU #6	679	21	647	16
Program Total	3141		4161	
By Year	$	%	$	%
1	1313	11	1254	8
2	782	6	747	4
3	1886	15	1707	10
4	8581	68	12,934	78
Total Program Cost per Student	12,562		16,642	

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STUDENT: Enrollment: Actual

The student enrollment per class in this curriculum is 15 with a total of 61 students enrolled in the entire four years of the program.

FACULTY: Student Ratios: Actual

It should be indicated that this cost study was undertaken during a year in which the Medical Communications division was in a phase of increasing the enrollments in its classes. Based on the data collected, the faculty-student ratio in lecture was 1-9, in the laboratory 1-7 and in the clinic 1-1. For the year in which this analysis was completed, the faculty contact hours by the full-time faculty were low owing to a small fourth year class size of 8. (See Appendix D for Detailed Enrollments).

FACULTY: Contact Hours: Actual

The largest proportion of faculty contact hours actually were provided by part-time faculty who were responsible for 68% (2223 hours) of the faculty contact hours. A total of 81% (2663 hours) of the faculty contact time occurs within TRU #1. Most of it was taught, as indicated earlier, by the part-time faculty. Very modest amounts of faculty contact hours are provided by the other departments or divisions of the School of Allied Medical Professions (78 hours or 3% of the total). An additional 65 hours (2% of the total) are taught by the basic medical science faculty and 455 contact hours are delivered by faculty in the general university. This represents 14% of the total hours for the program (3,270 hours).

FACULTY: Availability: Actual

The full-time faculty were available for direct contact for 7.5% of their time with the part-time faculty (defined as guest lecturers and clinical staff from local hospital facilities) considered to be available 100% of their time devoted to this program.

FACULTY: Requirements: Actual

Three full-time faculty members were utilized in TRU #1 to offer this curriculum. These 3 FTE's represent 54% of the total for the program. An additional 1.2 part-time faculty members are needed. Thus the total for the TRU #1 is 4.2 FTE's while 0.2 FTE's were required from other divisions in the School of Allied Medical Professions, 0.1 FTE by the basic medical sciences, and 1.1 FTE's by the general university. The total faculty requirement for the program was 5.6 FTE's. The overall faculty-student ratio was 1-11.

COST: Total Program: Actual

The Total cost associated with the Medical Communication program as actually offered in 1974-75 was $191,559. Faculty cost amounted to $104,253 with Other cost of $191,559. The detailed analysis of the Total Cost appears in Appendix L.

COST: Total Program: Per Student per Year: Actual

In viewing the results of the analysis, 54% of the total cost per student per year resides with the full-time faculty members in the division of Medical Communications. An additional 18% of the cost resides with the part-time faculty members. The total for the TRU #1 is $2,248 per student per year. On a student per year basis, costs residing in the other teaching responsibility areas are $130 for other divisions in the School of Allied Medical Professions, $84 for departments in the basic medical sciences, and $679 for departments in the general university. The average total cost per student per year for the Medical Communications division is $3,141. As one might suspect the cost per student is highest in the Senior year ($8,581) with the costs for the Freshman, Sophomore and Junior years being $1,313, $782, $1,886, respectively. The total cost of the four year program for each student is $12,562.

Theoretical Construction: Assumptions and Effects

A "theoretical" construction was completed and relevant costs calculated. In this constructed analysis 16 students per class have been assumed with a total of 64 students in the entire program. Faculty-student ratios for the Medical Communications program lecture sections were set at 1-16, with a ratio of 1-8 for laboratories and 1-1 for the clinics. It also has been assumed that full-time faculty members would be available 30% of their time for direct contact rather than as shown in the data on current actual availability determined from the didactic questionnaire (7.5%). The part-time faculty were assumed to be available 75% of their time for direct contact. Thus, regardless of who is paying their salary, 25% of their time was assumed to be provided for preparation for the direct contact for which they were responsible.

Considering the foregoing assumptions, let us look at the effect on faculty contact hours. For the full-time faculty members in the lecture mode, there is a slight decrease in the faculty contact hours from 390 to 240) with an increase in the faculty contact hours for the laboratory mode (from 40 to 140). Part of these changes also are related to the low number of students who were enrolled in the Senior year which is reflected in the data collected on the "actual" program. The major change, however, involves the assumption that the full-time faculty should be responsible for at least 25% of the clinical instruction in order to assist in efforts to assure that the content of the didactic portion is relevant to the clinical experiences. Thus there is an increase from no faculty contact hours in the clinic mode for full-time faculty members to 1200 hours. This now represents 21% of the total faculty contact hours for the curriculum, with a total of 27% (1580 hours) being taught by full-time faculty members in the division of Medical Communications.

Of the total curriculum, an additional 63% (3600 hours) are taught by the part-time faculty members. This represents a slight decrease in terms of the proportion of the curriculum taught by full-time faculty members but an increase in the total hours taught by part-time faculty members. With this constructed curriculum, 90% (5180 hours) of the total faculty contact hours (5792 hours) would reside with the full and part-time faculty attached to the division of Medical Communications. In the "theoretical" construction, there are almost insignificant changes regarding the faculty contact hours provided by faculty of the other divisions in the School of Allied Medical Professions, the basic medical sciences or the rest of the university's departments.

In examining the effects of these assumptions and changes on the faculty requirements it can be noted that 1.3 additional FTE's of part-time faculty assistance would be necessary from the Medical Communications division. One-tenth less FTE would be required from other divisions in the School of Allied Medical Professions, one-tenth more would be required from the basic medical sciences. The FTE requirement for the general university would remain the same. The total change of 1.3 for the program is from 5.6 FTE's to 6.9 FTE's.

Under the assumptions of the "theoretical" construction the faculty-student ratio would decrease slightly from 1-11 to 1-9. The assumptions have some rather significant effects upon the cost per student per year, which for the total program increased from $12,562 to $16,642. The only really major shift in the cost of the program would be in the fourth year where the cost goes from $8581 per student per year to $12,934.

What should be considered in deciding to change a program like Medical Communications with a resulting increase in cost? A very careful examination should be made of what the total expectation from the program really is. Quality education is a major factor. Faculty should be able to teach a curriculum that is relevant, current and also be able to participate in research and publication activities. The restructuring that is suggested by the "theoretical" model assumes that this faculty would teach 25% of the clinical contact time. This change would require the faculty members to go with students into some of the clinical settings in the Columbus area and work with the students in those settings. This is probably not unrealistic and could most likely be arranged with some of the clinical preceptors in the city. If this instruction were carefully carried out the clinical preceptors might benefit from the experience of having one of the faculty members there to comment or advise on problem areas, procedures or new techniques that might be helpful in this clinical setting. It is much more likely that the didactic curriculum would take on an even more realistic dimension if the faculty members were having these teaching experiences "in the field."

Another change to be considered is the provision of time for the part-time faculty members to prepare for the teaching experiences that they provide to the students in a clinical setting. This also would lead to increased quality in this program.

A change in the cost of this program on a per student basis under the theoretical assumptions would need to be justified on a "quality basis." It would be important to design appropriate instruments to measure the quality under the old system, implement the change, and reapply the instrument to see if the increased costs can be justified. On the other hand, examination should be made of the current program (the actual curriculum) to ascertain whether the numbers of publications and other portions of the total output of the faculty currently is such that it is adding sufficient quality to the instructional content. If so, perhaps the cost effectiveness of the current programs is optional and no change is necessary.

SUMMARY:

The average cost per student per year for the total program in Medical Communications for 1974-75 was calculated to be $3,141 for an average class size of 15 students. These students are required to take 2285 contact hours in their four year program. Twenty-seven percent of the curriculum was provided by the primary department consisting of three full-time faculty members and 1.2 FTE's of part-time faculty. An additional 1.4 FTE's from other allied health departments, basic science departments and the general university were required to offer the curriculum. The overall faculty-student ratio was 1-11.

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MEDICAL ILLUSTRATION

PROGRAM: Description

The Medical Illustration curriculum is comprised of basic university and fine arts requirements with specialization in related arts and sciences courses. Execution of surgical, anatomical and pathological illustrations in a wide range of media is a part of the student's training. The preparation of charts, graphs, medical displays and other related artwork also is taught. In addition, students receive instruction in medical photography. Medical Illustrators prepare artwork for medical textbooks and journals as well as other forms of visual communications such as television, motion pictures, audio slide presentations and many others.

PROGRAM: Curriculum Description

Applicants to the program are screened by a faculty committee at the end of the student's Sophomore year. As a part of the selection process students are asked to submit a written statement describing their interest in Medical Illustration and are required to submit a portfolio of work. Students who have previously completed a baccalaureate program may be admitted to this program and receive a certificate of completion. Students enrolled in the four year program receive a bachelor of science in Allied Health. Graduates of the program find positions in hospitals, medical schools, medical research institutes, pharmaceutical firms, medical publishing houses and private free-lance practice. For a complete description of the suggested four year curriculum for the program one may refer to Appendix B.

The program cost analysis methodology was utilized to determine the total costs related to the Medical Illustration program. Data regarding the student contact hour requirements, faculty contact hour requirements, faculty full-time equivalent requirements, faculty costs and other costs related to the total program cost per student per year are outlined in detail in Table 5. The reader may wish to refer to it for specific information.

PROGRAM: Student Contact Hours: Actual

The student contact hours received by student from the Medical Illustration faculty in the lecture mode represents 9% (333 hours) of the total hours (3640) in the program. Laboratory experiences provided by this faculty represent 835 student contact hours or 23% of the curriculum, with 1% (22 hours) provided in the clinic mode. The Medical Illustration faculty is responsible for providing a total of 11,190 (33%) student contact hours. Thirty hours (1%) of the student contact hours occur in courses taught by other divisions of the School of Allied Medical Professions, with 420 hours (12%) occurring in courses taught by faculty members in the basic medical sciences. There are 2000 student contact hours (55%) of the curriculum received from the courses offered by the general university departments and other faculty.

STUDENT: Enrollment: Actual

For the four years of this program the average enrollment per class was 5, with a total of 19 enrolled in the program.

FACULTY: Student Ratios: Actual

The faculty-student ratio in the lecture mode offered by the division of Medical Illustration was identified as 1-1, in the laboratory mode 1-2 and the clinic mode 1-1.

Table 5

OSU:SAMP: Cost Study
Program Cost Analysis: Actual and Theoretical

Division: Medical Illustration

	ACTUAL		THEORETICAL	
PROGRAM: Student Contact Hours	#	%	#	
TRU #1 Lecture	333	9		
Laboratory	835	23		
Clinic	22	1		
Total	1190	33		
2	30	1		
3	420	11		
4	-	-		
6	2000	55		
Program Total	3640			
STUDENT: Enrollment				
Class Average	5		6	
Program Total	19		24	
FACULTY: Faculty-Student Ratios				
TRU #1 Lecture	1-1		1-6	
Laboratory	1-2		1-3	
Clinic	1-1		1-3	
TRU #4 Clinic	-		-	
: Faculty Contact Hours	#	%	#	%
TRU #1 Full-Time				
Lecture	1325	37	333	13
Laboratory	1625	46	428	17
Clinic	105	3	-	-
Total	3055	86	761	30
Part-Time	114	3	1286	52
Total TRU #1	3169	89	2047	82
TRU #2	3	0	3	0
TRU #3	99	3	121	5
TRU #4	-	-	-	-
TRU #6	269	8	322	13
Program Total	3540		2493	
: Faculty Availability				
TRU #1 Full-Time		22.7		19.8
Part-Time		100.0		75.0
: Faculty Requirements	#	%	#	%
TRU #1 Full-Time	7	90	2	51
Part-Time	.1	0	.9	23
Total	7.1	90	2.9	74
TRU #2	0	0	0	0
TRU #3	.2	2	.3	8
TRU #4	-	-	-	-
TRU #6	.6	8	.7	18
Program Total	7.9		3.9	
: Faculty-Student Ratio				
Program Total	1-2		1-6	
COST PER STUDENT: Total Program Per Student Per Year				
Average	$	%	$	%
TRU #1 Full-Time	7008	78	2367	46
Part-Time	295	3	1065	21
Total	7303	81	3432	67
TRU #2	0	0	0	0
TRU #3	537	6	638	12
TRU #4	-	-	-	-
TRU #6	1189	13	1098	21
Program Total	9029		5168	
By Year	$	%	$	%
1	1891	5	1746	9
2	2616	7	2428	12
3	17,838	50	8781	42
4	13,771	38	7718	37
Total Program Cost Per Student	36,116		[illegible],673	

FACULTY: Contact Hours: Actual

The full-time faculty members of the division of Medical Illustration were responsible for 1325 (37%) of the faculty contact hours which are provided in the lecture mode, 46 (16.5%) of the faculty contact hours in the laboratory mode and 105 hours (3%) in the clinic mode. Therefore, the full-time faculty of the division of Medical Illustration were responsible for delivering 3055 (86%) of the faculty contact hours in this curriculum. Part-time faculty were responsible for 114 hours (3%) of contact. Thus TRU #1 faculty are responsible for the major portion (89%) of the faculty contact hours in this program. Other divisions of the school provide this program with 3 faculty contact hours, while the basic medical science divisions provide 99 (3%) contact hours. The general university is responsible for 269 (8%) of the faculty contact hours.

FACULTY: Availability: Actual

As a result of the analysis of the didactic questionnaire, the full-time faculty members in the division of Medical Illustration were found to have 22.7% of their time available for direct contact, and part-time faculty members were assumed to have 100% available.

FACULTY: Requirements: Actual

When the faculty requirements were analyzed, it was found that 7 full-time faculty members were being utilized by the division of Medical Illustration and only 0.1 FTE of part-time assistance was used. This represented 90% of the faculty requirements for the program and totalled 7.1 FTE's. FTE's supplied by other divisions of the

School of Allied Medical Professions were essentially zero with 0.2 of an FTE being supplied by the basic medical science departments and 0.6 by the rest of the university. Faculty requirements for this program totaled 7.9 FTE's. Overall, this is a faculty-student ratio of 1-2 for the entire program.

COST: Total Program: Actual

The total cost associated with the Medical Illustration program as actually offered in 1974-75 was $171,552. Faculty cost amounted to $100,182 with Other Cost of $71,370. The detailed analysis of the Total Cost appears in Appendix L.

COST: Total Program: Per Student per Year: Actual

With such a low faculty-student ratio and 3540 contact hours required to deliver the curriculum, it is not surprising to find that the average cost per student per year of this program ($9,029) is high compared to other programs analyzed in this study. The major proportion of the cost occurs in the TRU #1 ($7,303). The cost of basic medical science faculty is $537 per student per year and $1,189 per student per year of the total cost is assigned to the general university faculty. Moving from Freshman to Senior year the cost per student per year is $1,891, $2,616, $17,838 and $13,771 respectively for a total four year cost per student of $36,116.

Theoretical Construction: Assumptions and Effects

Since Medical Illustration is a high cost program, it was extremely interesting to construct a "theoretical" curriculum and with the assumptions which were made, to note the impact on the cost factors. In this constructed model we assumed six students per class with a program total for four years of 24 students. There was a shift in the faculty-student ratios increasing from 1-1 to 1-6 in the lecture mode, 1-2 to 1-3 in the laboratory mode and 1-1 to 1-3 in the clinic mode.

In the "theoretical" the clinic and laboratory hours were combined into a laboratory only category and assigned the assumption that full-time faculty would teach 25% and part-time faculty 75% on the combined number since, in essence, laboratory hours in Medical Illustration are taught as clinic.

With these changes in faculty-student ratios and a change in the structure of the faculty contact hours there is a slight shift in the faculty availability. In the actual curriculum the full-time faculty was available for direct contact 22.7% of the time and in the "theoretical" model this shifted downward to 19.8%.

With regard to the part-time faculty, for those involved with direct contact the assumption was made that they were available 75% of the time for direct contact with the students and 25% which is devoted to this program is available for preparation. In examining the effects on the faculty contact hours, one sees that there is a significant drop in the faculty contact hours supplied by the Medical Illustration faculty (TRU #1). In the lecture mode these go from 1325 to 333, which represents a change from 37% of the curriculum to 13% of the curriculum respectively. In a laboratory setting the change is from 1625 hours (47%) to 428 hours (17%) of the total curriculum. There is a fairly significant change in the manner in which part-time faculty members are used in the constructed model. There is a change from 114 faculty contact hours (3%) to 1286 hours (52%). The total faculty contact hours provided by the Medical Illustration faculty shifts from 3169 (89%) to 2047 (82%), in the total curriculum. There is a 2% increase in the contact hours provided by the basic science faculty and an increase of 5% of faculty contact hours provided by the general university departments. These shifts are of minor significance, since most of the restructuring occurs between the use of full-time and part-time faculty members in TRU #1. Given the above assumptions there are significant shifts in faculty requirements.

The number of full-time faculty required to provide the faculty contact hours in TRU #1 decreases from 7 to 2. The requirements for part-time faculty increases from 0.1 in the "actual" analysis to 0.9 FTE in the "theoretical" construction. The total FTE requirements for the Medical Illustration division decrease from 7.1 to 2.9. There are slight increases in the FTE requirements for the other Teaching Responsibility Units due to the increase in the student enrollment.

For TRU #3 the change is from 0.2 in the "actual" to 0.3 in the "theoretical." In TRU #6 the change is from 0.6 to 0.7 FTE's.

There is a significant change in the program total faculty-student ratio from 1-2 to 1-6.

The decreases in full-time faculty requirements for TRU #1 are directly reflected in a drop in the average cost per student per year from $7,008 to $2,367. Medical Illustration part-time faculty related costs increased from $295 to $1,065 on a per student per year basis. This is due to increased use and a slightly higher salary rate. The costs of TRU #3 and #6 went from $537 and $1,189 in the "actual" analysis to $638 and $1,098 in the "theoretical" analysis. The total average cost per student per year dropped from $9,029 to $5,168. This represents a 43% decrease in the average cost per student per year.

The rank order of cost per year over the four years remains relatively the same. The costs change from $1,891, $2,616, $17,838 and $13,771 in the Freshman to Senior years in the "actual" analysis to $1,746, $2,428, $8,781 and $7,718 in the "theoretical" construction.

The total program cost per student decreases from $36,116 to $20,673. With such a dramatic change in the faculty requirements from the "actual" to the "theoretical" analysis, one must seriously question if the "theoretical" assumptions are applicable to this program. If a minimum faculty group size is considered to be three, a division with only two members may not function effectively.

Should a program be offered to an entering class of six? This is a question which should be seriously considered.

SUMMARY:

The average cost per student per year for the total program in Medical Illustration actually offered in 1974-75 was calculated to be $9,029 for an average class size of five students. These students are required to take 3640 contact hours during their four year program.

Thirty-three percent of the curriculum was provided by the primary department which consisted of seven full-time faculty members. An additional .9 FTE was required in part-time, basic science department, and general university faculty to offer the curriculum. The overall faculty-student ratio was 1-2.

MEDICAL RECORD ADMINISTRATION

PROGRAM: Description

In recent years one of the important members of the modern health team is the Medical Record Administrator. In this age of computer technology and data storage, Medical Record Administration is an exciting and relatively new field that has become increasingly important. It offers an excellent opportunity in a variety of health facilities, such as hospitals, nursing homes, clinics and public health facilities. The Medical Record, a permanent record of the patient's illness or injury is used to assist in the patient's treatment. Also, it is a complete and accurate document of information of medical, scientific and legal importance.

PROGRAM: Curriculum Description

The curriculum in Medical Record Administration prepares the student to design and maintain a record filing and retrieval system. The student also learns to direct and supervise medical record departments in modern health facilities. Graduates are skilled in medical record analysis, coding and indexing of diseases, research techniques, and the retrieval of medical information. Computer science also is included as part of the curriculum.

As with other programs the curriculum is divided into two major components, preprofessional and professional. The preprofessional component includes basic courses in anatomy, biology, English, mathematics, psychology, and physiology. The professional phase is composed of the didactic course work with clinical experiences in the hospital setting which affords the student an excellent opportunity to work with many different health professionals. Every effort is made to see that students also have experiences in other health facilities outside of the hospital. At the conclusion of the four year program students are awarded the bachelor of science degree in Allied Health Professions. For a complete outline of the curriculum one may wish to turn to Appendix B.

Results of the cost analysis for both the "actual" and the "theoretical" program may be found in Table 6. The reader may wish to refer to it before proceeding. Student contact hours, faculty contact hours, faculty full-time equivalents and faculty costs plus other direct and indirect costs were calculated for this program. This allowed for the determination of the average total cost per student per year as well as the total cost of the program per student.

PROGRAM: Student Contact Hours: Actual

Student contact hours in the lecture mode received by the students from the Medical Record Administration faculty totals 407 hours or 16% of the total student contact hours. The laboratory mode represents 30 hours and the clinic mode 160, for a total of 597 student contact hours in TRU #1. Seven percent (190 hours) of student contact hours occur in courses taught by other divisions within the School of Allied Medical Professions. The students receive an additional 6% (165 hours) in courses provided by the basic medical science faculty. The general university faculty provides 1,245 hours (48%) of the total student contact hours for the students in this program.

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Table 6
OSU:SAMP: Cost Study:
Program Cost Analysis: Actual and Theoretical

Division: Medical Record Administration

	ACTUAL		THEORETICAL	
PROGRAM: Student Contact Hours	#	%	#	
TRU #1 Lecture	407	16		
Laboratory	30	1		
Clinic	160	6		
Total	597	23		
2	190	7		
3	165	6		
4	400	16		
6	1245	48		
Program Total	2597			
STUDENT: Enrollment				
Class Average	13		14	
Program Total	51		56	
FACULTY: Faculty-Student Ratios				
TRU #1 Lecture	1-12		1-14	
Laboratory	1-13		1-14	
Clinic	1-2		1-2	
TRU #4 Clinic	1-1		1-1	
: Faculty Contact Hours	#	%	#	%
TRU #1 Full-Time				
Lecture	427	8	407	7
Laboratory	30	1	30	1
Clinic	50	1	280	5
Total	507	10	717	13
Part-Time	1195	23	840	15
Total TRU #1	1702	33	1557	28
TRU #2	91	2	91	2
TRU #3	77	2	82	2
TRU #4	2928	57	3416	62
TRU #6	310	6	333	6
Program Total	5108		5479	
: Faculty Availability				
TRU #1 Full-Time		13.2		18.7
Part-Time		100.0		75.0
: Faculty Requirements	#	%	#	%
TRU #1 Full-Time	2	38	2	36
Part-Time	.6	12	.6	11
Total	2.6	50	2.6	47
TRU #2	.2	4	.2	4
TRU #3	.2	4	.2	4
TRU #4	1.5	29	1.8	32
TRU #6	.7	13	.8	13
Program Total	5.2		5.6	
: Faculty-Student Ratio				
Program Total	1-10		1-10	
COST PER STUDENT: Total Program Per Student Per Year				
Average	$	%	$	%
TRU #1 Full-Time	1692	43	1146	33
Part-Time	395	10	344	10
Total	2087	53	1490	43
TRU #2	156	4	142	4
TRU #3	200	5	182	5
TRU #4	988	25	1080	32
TRU #6	517	13	538	16
Program Total	3948		3432	
By Year	$	%	$	%
1	1133	7	1182	9
2	1445	9	1414	10
3	1534	10	1572	11
4	11,683	74	9558	70
Total Program Cost per Student	15,795		13,726	

Students in the Medical Record Administration program have what is considered to be an outside or terminal clinical experience in which they receive 400 contact hours. These hours represent 16% of the total of student contact hours for the program.

STUDENT: Enrollment: Actual

At the time this study was conducted there were 13 students per class with a total of 51 students in the four year program.

FACULTY: Student Ratios: Actual

The faculty-student ratio was 1-13 for lecture and laboratory. In the clinic, however, it was 1-2 and in the terminal clinical experience it was 1-1.

FACULTY: Contact Hours: Actual

Faculty of the division were responsible for 427 faculty contact hours which represented 8% of the total for the curriculum. These faculty members provided 30 laboratory hours and 50 clinical hours, for a total of 507 (10%) faculty contact hours. Part-time faculty played a significant role providing 1195 (23%) contact hours. The total faculty contact hours provided by the Medical Record Administration division, including the part-time faculty, was 1702 hours which represented 33% of the total faculty contact hours for the program.

TRU #2 (faculty from other divisions of the School of Allied Medical Professions) provided 91 faculty contact hours or approximately 2% and an additional 77 hours were provided by the basic medical sciences with 6% (310 hours) provided by the general university faculty. In TRU #4, the terminal clinical experience, 2928 faculty contact hours were provided. These hours represented 57% of the total faculty contact hours in the curriculum.

FACULTY: Availability: Actual

The full-time faculty were available for 13.2% of their time with the part-time faculty (defined as guest lecturers and clinical staff from local hospital facilities) considered to be available 100% of their time that was devoted to this program.

FACULTY: Requirements: Actual

The faculty utilized for the program on a full-time basis from the Medical Record Administration division were 2.0 FTE's with an additional 0.6 FTE's of part-time faculty being required. The total for the division, therefore, was 2.6 FTE's. An additional 0.2 FTE's each were required from both the other faculty members in the School of Allied Medical Professions and the basic science faculty. From the general university faculty, 0.7 FTE's were necessary. Also, 1.5 FTE's were required from the faculty members who provided the terminal clinical experience. This terminal clinical experience represented 29% of the faculty requirements for the program. This should be compared with the 38% that was provided by the full-time faculty members in the division of Medical Record Administration. The faculty-student ratio for the total program was calculated to be 1-10.

COST: Total Program: Actual

The Total cost associated with the Medical Record Administration program as actually offered in 1974-75 was $201,379. Faculty cost amounted to $76,248 with Other cost of $125,131. The detailed analysis of the Total Cost appears in Appendix L.

COST: Total Program: Per Student per Year: Actual

Proceeding through the analysis to the cost figures it can be noted that the major proportion of the cost (53%) is attributed to the Medical Record Administration division (TRU #1). Of the average cost per student per year for the program ($3,948), $1,692 or 43% was for full-time faculty members in TRU #1 with an additional 10% ($395) for part-time faculty in the division. There was 4% ($156) of the average cost per student per year that could be assigned to other divisions in the School of Allied Medical Professions with 5% ($200) attributed to basic medical science faculty. The general university faculty (TRU #6) contributed 13% ($517) of the average cost per student per year. A significant proportion of the cost was assigned at the terminal clinical experience. This represented 25% of the total average cost per student per year of $988.

In looking at the distribution of the cost per student per year, from the Freshman to Senior years, the costs are $1,133, $1,445, $1,534 and $11,683 respectively. Thus, the total program cost per student is $15,795. It can be readily determined that the major proportion of the cost (74%) resides in the fourth year of the program. It is in this year that a large number of faculty contact hours are provided with the lower faculty-student ratio related to clinical experience.

Theoretical Construction: Assumptions and Effects

As with the other nine programs a "theoretical" construction was completed. Table 6 notes that there were only slight changes in the student enrollment. With the addition of one student the class total becomes 14 and the program total 56 as opposed to 51 students in the "actual" program. The faculty-student ratios were modified only slightly. In the case of both the lecture and the laboratory, the ratio was changed from 1-13 to 1-14. With both the clinical experience and the terminal clinical experience ratios remaining 1-2 and 1-1 respectively.

The only significant change in the faculty contact hours was related to the assumption that the full-time faculty members should teach at least 25% of the clinical experience. This results in a change in the clinical faculty contact hours from 50 in the "actual" analysis to 280 in the "theoretical" construction. This also contributes to the essential change in the total faculty contact hours for which the full-time division faculty was responsible. These hours shift from 507 to 717. The contact hours that were provided by the part-time faculty members shifts downward from 1195 to 840 hours. The change is from 23% to the total curriculum to 15%.

In viewing the total faculty contact hours provided by the Medical Record Administration full and part-time faculty in the "theoretical" construction versus the "actual" analysis, there is a very slight shift from 33% to 28% or a reduction of 5% of the faculty contact hours provided within the faculty of the Medical Record Administration division. In the "theoretical" construction, there is essentially no change in the faculty contact hours provided by other divisions of the School of Allied Medical Professions or the basic science faculty. There was a slight increase (2928 to 3416 hours) in hours provided in the terminal clinical experience (TRU #4). Hours provided by the general university faculty (TRU #6) remained essentially the same.

It is interesting to note in this analysis that the total faculty contact hours in the "actual" analysis (5108) is increased only slightly (5479). Even with this increase, there is a decrease in the average cost per student per year for the total program. The change in cost is from $3,948 to $3,432. This drop in the total program cost per student was essentially the result of redistribution of teaching responsibility between full and part-time faculty in TRU #1 and slightly increasing the number of students in the total program.

It may be noted that the faculty requirements to teach the program in almost all of the Teaching Responsibility Units remain nearly the same in both the "actual" analysis and "theoretical" constructions with the faculty-student ratio for the total program remaining at 1-10. In general terms, it appears that this program was cost effective and efficient based on the assumptions that were applied to the "theoretical" construction.

A note should be made relative to faculty availability. As with other programs the assumption was made in the "theoretical" construction that faculty members, who were participating on a part-time basis relative to TRU #1, were available for direct contact 75% of their time. Additionally, 25% of their total time that was devoted to this program would be available to the faculty for preparation. Hopefully this would contribute to the quality of the instruction which they provide. Also, the full-time faculty in the "theoretical" construction were considered to be available 5.5% of their time (13.2% to 18.7%). In considering the total activities which are expected of the faculty,

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teaching is the first priority responsibility. It should be noted, however, that the faculty at this time was devoting major efforts to more fully develop their curriculum and to make major restructuring changes, so that curriculum development was a high priority responsibility of the faculty.

In this allied health profession one of the goals is most likely to be the pursuit of advanced degrees on the part of faculty members. Hopefully, some publications as a result of curriculum development and research (scholarly activity) in areas similar to this also would be part of the goals. In this program, time for activities like those just suggested would come from the relatively efficient use of other Teaching Responsibility Units such as the other faculty members in the School of Allied Medical Professions, terminal clinical experiences for students, general university faculty, and faculty of the basic medical sciences. It may be recalled that these other faculties are responsible for providing 67% of the total faculty contact hours necessary in this program. This, of course, may have resulted from the fact that the Medical Record Administration discipline is relatively young. Therefore, it may have less "medical record content" which as Medical Record Administration faculty are required to teach. Alternately, it may be that its professional course work contains sufficient content areas that are found in other disciplines that students are able to obtain the necessary content from other instructional area. From an analytical standpoint this program is of significant interest as related to the foregoing points, especially the question of which portion of the discipline must be taught by faculty in that discipline.

SUMMARY:

The average cost per student per year for the total program in Medical Record Administration for 1974-75 was calculated to be $3,948 for an average class size of 13 students. These students are required to take 2597 contact hours in their four year program. Twenty-three percent of the curriculum was provided by the primary department consisting of two full-time faculty members and 0.6 FTE part-time faculty. An additional 1.1 FTE's from other allied health departments, basic science departments and the general university were required to offer the curriculum plus 1.5 FTE's of clinical preceptorship for the terminal clinical experience. The overall faculty-student ratio was 1-10.

MEDICAL TECHNOLOGY

PROGRAM: Description

Medical Technologists perform hundreds of different tests upon which physicians rely for assistance in diagnosing and treating disease. Medical Technologists perform chemical tests on blood and other body fluids. They type blood and prepare blood for transfusions as well as performing other tests such as blood counts to assist in the diagnosis of anemia and other diseases. Medical Technologists may be responsible for isolating and identifying bacteria that cause disease and then perform tests which help determine what drugs may be most helpful to treat the patient against the bacteria.

Usually Medical Technologists work under the general supervision of a pathologist in a hospital laboratory. However, there are many other opportunities for Medical Technologists who wish to work in physician's offices, clinics, public health laboratories, the armed services, drug firms, and research laboratories. In many of these settings they work as independent professionals. This is one allied health profession in which the professionals must have a willingness to work behind the scenes where they are required to have a high degree of manual dexterity, good judgment, accuracy and precision.

PROGRAM: Curriculum Description

The curriculum for this program is divided into preprofessional and professional phases with the first two years being devoted to completion of the basic education requirements including courses in the physical and biological sciences. The last two years of the program are devoted to professional Medical Technology courses with the fourth year devoted more exclusively to gaining clinical experiences within the university hospitals. Upon the completion of the program the student receives a bachelor of science in Allied Health Professions. The 1974-75 curriculum at Ohio State University may be reviewed in Appendix B.

Results of the program cost analysis for both the "actual" curriculum and the constructed "theoretical" analysis are presented in Table 7. Student contact hours requirements, faculty contact hours requirements, faculty FTE requirements, faculty costs, other direct and indirect costs were calculated in order to determine the total cost of the program per student, which for this four year program was $16,311 or an average of $4,078 per student per year.

PROGRAM: Student Contact Hours: Actual

The Medical Technology faculty provides 52% of the student contact hours demanded by this curriculum, which represents 9% (350 hours) in the lecture mode, 32% (1210) in the laboratory mode with 11% (390) in the clinic. Students receive none of their student contact hours from other faculty members in the School of Allied Medical Professions. There were, however, 9% (330) of the program's student contact hours in the basic medical sciences and 1460 hours (39%) in general university courses. Total student contact hours for this program were 3740.

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Table 7
OSU:SAMP: Cost Study:
Program Cost Analysis: Actual and Theoretical

Division: Medical Technology

	ACTUAL		THEORETICAL	
PROGRAM: Student Contact Hours	#	%	#	
TRU #1 Lecture	350	9		
Laboratory	1210	32		
Clinic	390	11		
Total	1950	52		
2	-	-		
3	330	9		
4	-	-		
6	1460	39		
Program Total	3740			
STUDENT: Enrollment				
Class Average	27		24	
Program Total	109		96	
FACULTY: Faculty-Student Ratios				
TRU #1 Lecture	1-14		1-24	
Laboratory	1-9		1-8	
Clinic	1-2		1-2	
TRU #4 Clinic	-		-	
: Faculty Contact Hours	#	%	#	%
TRU #1 Full-Time				
Lecture	265	2	350	4
Laboratory	1953	18	3630	38
Clinic	0	0	1176	12
Total	2218	20	5156	54
Part-Time	7685	70	3504	36
Total TRU #1	9903	90	8660	90
TRU #2	-	-	-	-
TRU #3	225	2	199	2
TRU #4	-	-	-	-
TRU #6	856	8	761	8
Program Total	10,984		9620	
: Faculty Availability				
TRU #1 Full-Time		23.1		29.8
Part-Time		100.0		75.0
: Faculty Requirements	#	%	#	%
TRU #1 Full-Time	5	42	9	66
Part-Time	4.2	36	2.4	18
Total	9.2	78	11.4	84
TRU #2	-	-	-	-
TRU #3	.5	4	.5	3
TRU #4	-	-	-	-
TRU #6	2.0	18	1.8	13
Program Total	11.7		13.7	
: Faculty-Student Ratio				
Program Total	1-9		1-7	
COST Total Program Per Student Per Year				
PER Average	$	%	$	%
STUDENT: TRU #1 Full-Time	2352	57	2905	62
Part-Time	801	20	775	17
Total	3153	77	3680	79
TRU #2	-	-	-	-
TRU #3	234	6	266	6
TRU #4	-	-	-	-
TRU #6	691	17	706	15
Program Total	4078		4652	
By Year	$	%	$	%
1	1394	8	1425	8
2	933	6	953	5
3	2924	18	3115	17
4	11,060	68	13,114	70
Total Program Cost per Student	16,311		18,607	

STUDENT: Enrollment: Actual

There were 27 students per class with 109 in the total program.

FACULTY: Student Ratios: Actual

The faculty-student ratios in the lecture mode were 1-28 in the laboratory 1-10 and in the clinic 1-2. Faculty contact hours provided by the Medical Technology division full-time faculty represented 20% of the total for the program. These 2218 hours resulted from 265 faculty contact hours in the lecture mode and 1953 hours in the laboratory mode. Part-time faculty members, which also includes guest lecturers and clinical personnel associated with the division of Medical Technology, provided nearly 70% of the total faculty contact hours for this program.

Most of these hours were in the hospital/clinical setting but for this analysis they have not been shown as clinic hours but rather as laboratory hours. With such a high number (9903) of faculty contact hours provided by this division 90% of the instruction is offered by TRU #1, with only 2% being provided by basic medical science faculty and 8% by the rest of the general university faculty.

FACULTY: Availability: Actual

The full-time faculty members in the division were available 23.1% of their time and all part-time faculty 100% for direct student contact.

FACULTY: Requirements: Actual

Five full-time faculty were available within the division as well as 4.2 part-time FTE's, for a total of 9.2 faculty members associated with the Medical Technology division (TRU #1). This total included part-time faculty members who have major service responsibilities in the University Hospitals Clinical Laboratories. Only 0.5 FTE's of faculty time were required from basic science faculty members with 2 FTE's required from the general university. Total faculty requirements for the program were 11.7. The overall program faculty-student ratio was 1-9.

COST: Total Program: Actual

The Total cost associated with the Medical Technology program as actually offered in 1974-75 was $444,458. Faculty cost amounted to $154,409 with Other cost of $290,049. The detailed analysis of the Total Cost appears in Appendix L.

COST: Total Program: Per Student per Year: Actual

In examining the cost distribution as the result of this analysis it should be obvious that the major costs would reside within TRU #1 (Medical Technology Faculty). This is indeed the case with 77% of cost residing in this unit. Of the average cost per student per year of $4,078, $2,352 resides with the full-time faculty in TRU #1. A cost of $801 per student per year was ascertained as from part-time faculty members. Basic science faculty members contribution to the cost was $234 with faculty from the general university being responsible for $691 of the costs.

The distribution of the costs over the four year program from Freshman to Senior years was $1,394, $933, $2,924, and $11,060 respectively. It can be seen on the basis of this analysis that

68% of the costs reside in the fourth year of the program with the next largest percentage (18%) in the third year.

Theoretical Construction: Assumptions and Effects

A constructed "theoretical" analysis was undertaken for the Medical Technology Program using assumptions similar to those which have been used for other programs (See Appendix J).

The student enrollment per class was reduced from 27 to 24 with a program total reduction from 109 to 96. As can be seen again by reference to Table 7, with the reduction in the student enrollment there is a concomitant change in the faculty-student ratios. In TRU #1 for the lecture mode the ratio was reduced to 1-24, in the laboratory mode again a slight reduction to 1-8. The clinic mode remains at 1-2. As with the previous programs we have assumed that at least 25% of the student's clinical experience should be taught by the full-time faculty members of the program. Thus the full-time faculty members would become responsible for 1176 faculty contact hours in the clinical setting. This represents 12% of the total hours for the reconstructed program. With regard to lecture mode there is a slight increase from 2% to 4% of faculty contact hours provided by full-time faculty members. There is a significant increase in laboratory hours provided by full-time faculty members. This shift goes from 1953 hours to 3630 hours, which represents 38% of the reconstructed curriculums faculty contact hours. Thus the commitment of full-time faculty members for faculty contact hours moves from 2218 to 5156 hours, a change from 20% to 54% of the total faculty contact hours in the curriculum. There is a marked reduction in the faculty contact hours provided by part-time faculty members. This change is from 7658 hours (70%) to 3504 hours (36%). In both the "actual" and "theoretical" analysis approximately 90% of the curriculum remains the responsibility of faculty members in Medical Technology.

Insignificant changes occur in responsibility of the basic science faculty members and the general university faculty members who continue to provide 2% and 8% respectively of the faculty contact hours in the curriculum. There is a slight reduction in the number of hours in both of these faculty groups, however, due to the enrollment decreases. The total program hours in this reconstruction shifts from 10,984 to 9620.

This revised construction also results in changes in faculty availability for direct contact. For the full-time faculty members in Medical Technology TRU #1 the shift is from 23.1% to 29.8%, for part-time faculty members the shift is from 64.1% to 75%. Again, as before, this assumes that the part-time faculty members have available 25% of their time for this program to prepare for presentations and 75% for direct contact instruction. It also assumes that the full-time faculty members on a percentage basis would be responsible for a slightly increased amount of direct faculty availability.

As with the "actual" analysis, the major "theoretical" cost (79%) resides in the Medical Technology division. Of the average cost per student per year of $4,652, TRU #1 full-time faculty account for $2,905 and part-time faculty for $775, basic science faculty add $266 to the cost while the general university faculty associated cost is $706.

The important changes which are directly related to an increased cost per student in the "theoretical" construction result from the faculty requirements utilized in the reconstructed curriculum. The full-time faculty members required in the Medical Technology division to carry out the "theoretical" program would be 9 FTE's rather than 5. The 9 FTE's of course, would provide for 66% of the faculty requirements rather than the previous 42%. Part-time faculty members would be decreased somewhat from 4.2 FTE's to 2.4 FTE's. Total FTE's for the Medical Technology division (TRU #1) would shift from 9.2 to 11.4 FTE's. No significant changes occur in the faculty requirements for the basic science faculty or the general university faculty. Total faculty for the program moves from 11.7 to 13.7 or an increase of 2 FTE's. The faculty-student ratio for the entire program changes from 1-9 to 1-7.

The major impact of the changes imposed with the "theoretical" construction reside in the cost of the third and fourth years. There is an increase in the third year cost from $2,924 to $3,115 and in the Senior year $11,060 to $12,114 per student per year. This shift is mainly due to the increased requirements for full-time faculty members in this reconstruction. A partial reduction in the amount of full-time faculty members necessary from the general university (owing to reduced enrollments) offsets some of the cost of the increased full and part-time faculty members required in the Medical Technology division itself. The TRU #1 total changes from 9.2 FTE's to 11.4 while for the total program the change is from 11.7 to 13.7 FTE's.

SUMMARY:

The average cost per student per year for the total program in Medical Technology for 1974-75 was calculated to be $4,078 for an average class size of 27 students. These students are required to have 3740 contact hours during their four year program. Fifty-two percent of the curriculum was provided by the primary department consisting of five full-time faculty and 4.2 FTE's of part-time faculty. An additional 2.5 FTE's from basic science departments and the general university were required to offer the curriculum. The overall faculty-student ratio was 1-9.

OCCUPATIONAL THERAPY

PROGRAM: Description

Occupational Therapists are professionally trained men and women who work with children and adults in hospitals, rehabilitation centers, special schools, sheltered workshops and community service programs. Patients with whom the Occupational Therapists work frequently have emotional, physical, or medical disorders.

Along with other members of the health care team the Occupational Therapists work cooperatively to assist patients in regaining abilities they have lost and/or in learning to live effective lives with their disabilities. These goals may be accomplished by the Occupational Therapists through the use of a variety of skills: manual, creative, recreational, industrial, pre-vocational, educational, self care and homemaking activities. Additionally, Occupational Therapists teach the use of adaptive devices and artificial limbs.

In this work the Occupational Therapist determines a treatment program through evaluation of the patients particular needs, analysis of the above skills as treatment media and adaptation of the media to the patient. Occupational Therapy is concerned with the patients physical and psychological needs. Therefore, included in the curriculum are courses in psychology, sociology, basic sciences, anatomy and physiology as well as treatment techniques. Professional courses provide the students with an opportunity first to observe and then to participate in the application of skills and techniques with patients as they simultaneously acquire more knowledge in their professional discipline.

PROGRAM: Curriculum Description

In addition to didactic preparation, the curriculum includes nine months of clinical affiliations at selected hospitals throughout the country. Suggested courses for the preprofessional program as well as the professional program in Occupational Therapy may be found in Appendix B.

The program cost analysis methodology was applied to the Occupational Therapy curriculum in the step by step manner. Thus, data on student contact hours, faculty contact hour requirements, faculty full-time equivalent requirements, faculty costs, other direct and indirect costs were ascertained for this program. Complete results of the analysis for both the "actual" and "theoretical" analysis are shown in Table 8.

PROGRAM: Student Contact Hours: Actual

A total of 20% (850) of the student contact hours occur in TRU #1 with 400 hours occurring in the lecture mode, 260 hours in the laboratory mode and 190 hours in the clinic mode. Student contact hours in other divisions of the School of Allied Medical Professions (TRU #2) amount to 6% (230 hours) of the total. Another 8% (320 student contact hours) are related to the basic medical sciences (TRU #3). Thirty-five percent (35%) of the student contact hours reside in the terminal clinical affiliations (TRU #4). Other departments in the general university provide the instruction wherein the students receive 31% (1310 hours) of their student contact hours. Total student contact hours for the program are 4190.

Table 8
OSU:SAMP: Cost Study:
Program Cost Analysis: Actual and Theoretical

Division: Occupational Therapy

	ACTUAL		THEORETICAL	
PROGRAM: Student Contact Hours	#	%	#	
TRU #1 Lecture	400	10		
Laboratory	260	6		
Clinic	190	4		
Total	850	20		
2	230	6		
3	320	8		
4	1480	35		
6	1310	31		
Program Total	4190			
STUDENT: Enrollment				
Class Average	49		48	
Program Total	194		192	
FACULTY: Faculty-Student Ratios				
TRU #1 Lecture	1-24		1-48	
Laboratory	1-25		1-24	
Clinic	1-3		1-3	
TRU #4 Clinic	1-1		1-3	
: Faculty Contact Hours	#	%	#	%
TRU #1 Full-Time				
Lecture	501	1	400	2
Laboratory	250	1	520	3
Clinic	50	0	768	4
Total	801	2	1688	9
Part-Time	3367	9	2272	12
Total TRU #1	4168	11	3960	21
TRU #2	351	1	299	2
TRU #3	646	2	634	3
TRU #4	32,130	82	12,432	66
TRU #6	1553	4	1521	8
Program Total	38,848		18,846	
: Faculty Availability				
TRU #1 Full-Time		8.3		29.3
Part-Time		100.0		75.0
: Faculty Requirements	#	%	#	%
TRU #1 Full-Time	5	16	3	18
Part-Time	3.6	12	1.6	10
Total	8.6	28	4.6	28
TRU #2	.8	2	.7	4
TRU #3	1.5	5	1.4	8
TRU #4	16.7	53	6.5	39
TRU #6	3.6	12	3.5	21
Program Total	31.2		16.7	
: Faculty-Student Ratio				
Program Total	1-6		1-11	
COST PER STUDENT: Total Program Per Student Per Year				
Average	$	%	$	%
TRU #1 Full-Time	1346	23	567	18
Part-Time	279	5	302	9
Total	1625	28	869	27
TRU #2	164	3	145	4
TRU #3	395	7	372	12
TRU #4	2892	50	1143	36
TRU #6	699	12	686	21
Program Total	5775		3215	
By Year	$	%	$	%
1	1878	8	1825	14
2	5772	25	2580	20
3	6370	28	3962	31
4	9076	39	4500	35
Total Program Cost per Student	23,096		12,867	

STUDENT: Enrollment: Actual

For the 1974-75 academic year, the year of the study, enrollment per class was 49 students with a total in the program of 194.

FACULTY: Student Ratios: Actual

The faculty-student ratios for TRU #1 in the lecture mode were 1-24, laboratory 1-25 and clinic 1-3. For the terminal clinical experience the faculty-student ratio was considered to be 1-1.

FACULTY: Contact Hours: Actual

The faculty contact hours for the program were calculated according to the methodology. In the primary department, full-time faculty members were responsible for 501 (1%) of the faculty contact hours in the lecture mode, 250 hours in the laboratory mode and 50 hours in the clinical mode for a total for the full-time faculty of 801 hours. Part-time faculty members were responsible for 3367 hours (9%) of the total. All together, faculty members in the division of Occupational Therapy provide 4168 faculty contact hours which represents 11% of the total faculty contact hours in the curriculum.

One percent (351 hours) is provided by faculty members in other divisions of the School of Allied Medical Professions. An additional 2% (643 hours) is provided by faculty members in the basic medical sciences. Eighty-two percent of the total faculty contact hours provided in the curriculum reside with TRU #4, the terminal affiliation. This 82% represents 32,130 faculty contact hours. Faculty members in the general university (TRU #6) provide 1553 (4%) faculty contact hours. Total faculty contact hours for the program amounts to 38,884 hours.

FACULTY: Availability: Actual

Availability of faculty in the division of Occupational Therapy to provide the faculty contact hours is 8.3% for full-time faculty and 100% for part-time faculty. This raises a question of efficient use of faculty time to provide the necessary instruction which will be reflected in the construction of the "theoretical" analysis.

FACULTY: Requirements: Actual

In the "actual" analysis the utilization of 5 full-time faculty members and 3.6 part-time faculty members in TRU #1 was established. This in part is the effect of one faculty member who had no teaching responsibility for this program during the year of the analysis. The faculty requirements from other divisions in the School of Allied Medical Professions, were 0.8 FTE's from the basic medical sciences 1.5 and from the general university 3.5 faculty members. The terminal clinical affiliation requires 16.7 full-time equivalents. The faculty-student ratio for the total program is 1-6.

COST: Total Program: Actual

The Total cost associated with the Occupational Therapy program as actually offered in 1974-75 was $1,120,146. Faculty cost amounted to $464,709 with Other cost of $655,437. The detailed analysis of the Total Cost appears in Appendix L.

COST: Total Program: Per Student per Year: Actual

The average cost per student per year for such a program will reside in the Teaching Responsibility Unit providing the most hours. One can see from the analysis that this is indeed the case. TRU #4, the terminal clinical experience, is where 50% ($2,892) of the average cost per student per year resides. The total average cost per student per year for this program is $5,775. Full-time faculty in TRU #1 are responsible for 23% of the cost ($1,346), part-time faculty 5% of the cost ($279). This brings the total for TRU #1 to $1,625 or 28% of the total average cost per student per year. Three percent of the cost resides in other divisions of the School of Allied Medical Professions. This represents $164 in TRU #2. The basic medical science departments contribute 7% of the total cost of $395 per student per year. The rest of the university is responsible for 12% of the total cost or $699.

For the total four year program 8% ($1,878) of the cost resides in the Freshman year, 25% ($5,772) in the Sophomore year, 28% ($6,370) in the Junior year and 39% ($9,076) in the Senior year for a total cost per student for the four years of $23,096.

Theoretical Construction: Assumptions and Effects

As with the other programs a "theoretical" analysis was undertaken using similar assumptions. In the case of Occupational Therapy the student class size was established at 48 with a total of 192 enrolled in the program on a four year basis. Changes in the faculty-student ratios were suggested for the lecture mode. In TRU #1 the ratio was increased to 1-48. This assumes that one faculty member would lecture to the total group of students and that no other faculty would be responsible for the lecture at the same time. Faculty-student ratios for the laboratory courses taught by the Occupational Therapy division were set at 1-24. This is a slight decrease from 1-25 which was noted in the "actual" analysis.

In the clinical setting for TRU #1 a faculty-student ratio of 1-3 was utilized. For TRU #4, based on information obtained from the clinical questionnaires, the faculty-student ratio used for the "theoretical" analysis was 1-3 rather than 1-1 which was utilized for the "actual" analysis.

The faculty contact hours which resulted in the "theoretical" analysis show several changes with regard to TRU #1. Total faculty contact hours for lecture, laboratory and clinic increase from 801 hours (2%) in the "actual" analysis to 1688 hours (9%) in the "theoretical" analysis. This assumes that the full-time faculty in the division are responsible for teaching more hours in the clinical mode. Part-time faculty members attached to TRU #1 in the "theoretical" analysis are responsible for 12% (2272 hours) as opposed to only 9% of the total in the "actual" analysis. This represents, however, a decrease in the total faculty contact hours provided by part-time faculty. The difference is from 3367 hours in the "actual" analysis to 2272 hours in the "theoretical" analysis. This in part results from the full-time faculty members assuming increased responsibility for clinical teaching. It also assumes that part-time faculty members must have at least 25% of their time available to prepare for the instruction which they provide.

There are only insignificant changes in the faculty contact hours provided by other divisions in the School of Allied Medical

Professions and the basic medical sciences in the constructed "theoretical" analysis. There also is very little change in the hours provided by the faculty in the rest of the university (TRU #6). In the "actual" analysis they provide 1553 hours and in the "theoretical" analysis 1521 hours.

The major change in this curriculum and the one most responsible for reduction in the cost occurs in utilization of the faculty in the terminal clinical affiliation (TRU #4). In this case the assumption that one faculty member could be responsible for three students rather than only one leads to a significant reduction in the faculty contact hours. Reduction is from 32,130 to 12,432 faculty contact hours. With the assumptions utilized in this analysis the total faculty contact hours drops from 38,848 to 18,846 hours.

Faculty availability for teaching also changes as a result of the application of the "theoretical" analysis. The faculty in the Occupational Therapy division would be available 29.3% of their time rather than 8.3% as was ascertained from the "actual" analysis. The "actual" data was obtained utilizing the didactic questionnaire, course by course analysis and discussions with the faculty members. As was indicated previously, in the "theoretical" analysis part-time faculty members were to be available 75% of their time for contact with 25% being made available for preparation. Also, in restructuring it is assumed that all faculty members in a department would be involved in the teaching process. As a result of the "theoretical" analysis, the faculty requirements on a full-time basis dropped from 5 FTE's to 3 FTE's for full-time faculty in TRU #1. There is also a reduction in the part-time faculty requirements in this division from 3.6 FTE's to 1.6 FTE's. Total reduction in the full-time equivalents necessary for providing the curriculum in the "theoretical" analysis changes from a total of 8.6 FTE's to 4.6 FTE's.

It is interesting to note that even with these assumptions concerning teaching the faculty requirements from the division of Occupational Therapy still represent 28% of the total requirements for the total curriculum. Requirements from other divisions within the School of Allied Medical Professions and from the basic science faculty remained nearly unchanged. However, in the restructuring, the percentage of requirements have increased slightly as a result of the relationship to other changes involved relative to the total program.

The major shift in faculty requirements, as can be seen in reference to Table 8, is in TRU #1 where the faculty requirement drops from 16.7 FTE's to 6.5 FTE's. In the "theoretical" analysis, faculty members involved with the terminal clinical experience then provide 39% of the total faculty requirements for the program as opposed to 53% in the "actual" analysis.

As a result of the assumptions made in the "theoretical analysis the faculty-student ratio for the total program changes from 1-6 to 1-11. This represents a considerable increase in the efficiency of the utilization of faculty members.

It is interesting to note the effect on the average cost per student per year which result from the "theoretical" analysis. The total cost which is attributable to the full-time faculty members in TRU #1 drops from $1,346 to $567, a change of from 23% to 18% of the total from the "actual" analysis to the "theoretical" analysis. There is a slight increase in the cost of part-time faculty that would be necessary in the "theoretical" analysis. It increases from $279 in the "actual" analysis to $302 in the "theoretical." The total for TRU #1 however, shows a significant reduction from $1,625 to $869 per student per year. The costs associated with TRU #2 and TRU #3 remain nearly unchanged at $145 and $372 respectively.

The additional major change which might be anticipated as a reduction in the costs associated with TRU #4. These change from $2,892 to $1,143 in the "theoretical" analysis. There is little change in the costs associated with TRU #6 which for the "theoretical" analysis is $686. There is a significant cost reduction when one looks at the total average cost per student per year, which goes from $5,775 in the "actual" analysis to $3,215 in the "theoretical" analysis. Significant savings result in the three final years of the students program when viewed on the cost per student per year basis for the Freshman, Sophomore, Junior and Senior years. The costs in the "theoretical" analysis are $1,825, $2,580, $3,962 and $4,500. For a total cost per student for the four year program of $12,867 as opposed to $23,096 in the "actual" analysis.

SUMMARY:

The average cost per student per year for the total program in Occupational Therapy for 1974-75 was calculated to be $5,775 for an average class size of 49 students. These students are required to have 4190 contact hours during their four year program. Twenty percent of the curriculum is provided by the primary department consisting of five full-time faculty and 3.6 FTE's of part-time faculty. Thirty-five percent of the curriculum contact hours are provided by off site clinical preceptors calculated to be 16.7 full-time equivalent faculty. The remaining curriculum is provided by 5.9 FTE's of faculty from other allied health departments, basic science departments and the general university. The overall faculty-student ratio is 1-6.

PHYSICAL THERAPY

PROGRAM: Description

Physical Therapy is a rapidly expanding and challenging health profession that offers a career to young men and women who like to work with people and are interested in scientific and medical fields. The Physical Therapist participates in the evaluation of the capabilities and disabilities of patients and administers treatment procedures designed to alleviate or overcome these disabilities. The student receives basic education and instruction in the therapeutic use of exercise, heat, cold, water, light, electricity, ultrasound, massage, evaluative procedures and tests and measurements. The Physical Therapist treats patients of all groups and with a variety of disorders. Some of the most common disabilities seen by the Physical Therapist include burns, stroke, cerebral palsy, fractures, peripheral vascular disorders, arthritis, amputations and spinal cord injuries.

PROGRAM: Curriculum Description

The Physical Therapy academic program is designed to provide the student with a broad liberal arts and sciences background as well as academic and clinical training in Physical Therapy. The student may be admitted to the bachelor of science program at the end of the second year of the preprofessional phase of his college education. In order to be admitted however, the student must have completed a number of prerequisites. A postbaccalaureate certificate is available for students who have completed a baccalaureate degree with the approriate biological and physical science prerequisites.

Successful completion of the professional component assures the Physical Therapy student eligibility to take the state board examination. For a complete list of the curriculum and the professional and preprofessional courses, please refer to Appendix B.

The Physical Therapy program was analyzed according to the methodology which has been previously described. Results from the "actual" and "theoretical" analysis may be reviewed by reference to Table 9.

PROGRAM: Student Contact Hours: Actual

A total of 22% of the student contact hours are received in TRU #1, the Physical Therapy division. Thirteen percent or 360 student contact hours are received in the lecture mode from the division. An additional nine percent or 240 student contact hours are in the laboratory mode. No clinical hours are provided by the full-time faculty in the Physical Therapy division. Student contact hours in other divisions of the School of Allied Medical Professions represent seven percent of the total student contact hours with another 11% or 320 hours in TRU #3, the basic medical sciences. Forty-six percent of the student contact hours are in other departments of the university. This represents 1280 student contact hours. Fourteen percent of the student contact hours reside in TRU #4, the terminal clinical affiliation.

STUDENT: Enrollment: Actual

Student enrollment per class is 75 students, with a total of 300 for the four years of the program.

FACULTY: Student Ratios: Actual

The faculty-student ratio in the lecture mode for TRU #1 is 1-30. This composite is a result of combining the baccalaureate and

Table 9
OSU:SAMP: Cost Study:
Program Cost Analysis: Actual and Theoretical

Division: Physical Therapy

	ACTUAL		THEORETICAL	
PROGRAM: Student Contact Hours	#	%	#	
TRU #1 Lecture	360	13		
Laboratory	240	9		
Clinic	-	-		
Total	600	22		
2	200	7		
3	320	11		
4	400	14		
6	1280	46		
Program Total	2800			
STUDENT: Enrollment				
Class Average	75		60	
Program Total	300		240	
FACULTY: Faculty-Student Ratios				
TRU #1 Lecture	1-30		1-60	
Laboratory	1-16		1-15	
Clinic	-		-	
TRU #4 Clinic	1-1		1-3	
: Faculty Contact Hours	#	%	#	%
TRU #1 Full-Time				
Lecture	615	3	360	4
Laboratory	954	5	240	3
Clinic	120	1	-	-
Total	1689	9	600	7
Part-Time	496	3	720	9
Total TRU #1	2185	12	1320	16
TRU #2	244	1	134	2
TRU #3	990	5	792	10
TRU #4	13,320	72	4440	54
TRU #6	1884	10	1506	18
Program Total	18,623		8192	
: Faculty Availability				
TRU #1 Full-Time		17.6		31.3
Part-Time		100.0		75.0
: Faculty Requirements	#	%	#	%
TRU #1 Full-Time	5	25	1	11
Part-Time	1.2	6	.5	5
Total	6.2	31	1.5	16
TRU #2	.6	3	.3	3
TRU #3	2.2	12	1.8	19
TRU #4	6.9	34	2.3	25
TRU #6	4.4	21	3.5	37
Program Total	20.3		9.4	
: Faculty-Student Ratio				
Program Total	1-15		1-26	
COST PER STUDENT: Total Program Per Student Per Year				
Average	$	%	$	%
TRU #1 Full-Time	927	34	154	10
Part-Time	12	0	77	5
Total	939	34	231	15
TRU #2	79	3	50	3
TRU #3	374	14	383	25
TRU #4	797	29	332	22
TRU #6	552	20	549	35
Program Total	2741		1545	
By Year	$	%	$	%
1	1240	11	1234	20
2	1302	12	1310	21
3	2577	24	1579	26
4	5854	53	2060	33
Total Program Cost per Student	10,973		6183	

certificate program and lecturing to smaller groups of students rather than to the total student class size of 75. The laboratory faculty-student ratio is 1-15 in TRU #1. In the terminal clinical affiliation, the faculty-student ratio was considered to be 1-1.

FACULTY: Contact Hours: Actual

The faculty contact hours for this program are distributed as follows. For TRU #1, full-time faculty deliver 615 faculty contact hours in the lecture mode, 954 in the laboratory mode, and 120 in the clinical mode, for a total for the full-time faculty in TRU #1 of 1689 hours. Part-time faculty members were responsible for an additional 496 faculty contact hours making the total for Physical Therapy (TRU #1) 2185 hours which represents 12% of the total faculty contact hours in the curriculum. Other divisions within the School of Allied Medical Professions provide 1% (244 hours) of the faculty contact hours. An Additional 5% (990 hours) is provided by the basic medical sciences. The rest of the university departments provide an additional 10% (1884 hours) of the total faculty contact hours for the program. Faculty members involved in teaching students in their terminal clinical affiliation provide 13,320 hours which represent 72% of the faculty contact hours in this curriculum. The total faculty contact hours for the program was 18,623.

FACULTY: Availability: Actual

Faculty availability according to the "actual" analysis leads to the result that full-time faculty members in the Physical Therapy division (TRU #1) were available 17.6% of their time and the clinical part-time faculty members were considered to be available 100% for direct contact with students.

FACULTY: Requirements: Actual

According to the analysis, five faculty members were available on a full-time basis in the Physical Therapy division, with an additional 1.2 FTE's of faculty time from part-time faculty members for a total of 6.2 FTE's of faculty time in TRU #1. Other divisions within the School of Allied Medical Professions provide 0.6 FTE's of faculty time while the basic medical sciences supply 2.2 FTE's. Other departments within the university supply 4.4 FTE's with faculty members involved in the terminal clinical affiliation providing 6.9 FTE's. This TRU #4 portion represents 34% of the total for the program which was 20.3 FTE's. Thirty-one percent of the FTE's requirements are provided by the Physical Therapy division itself. The overall total program faculty-student ratio was 1-15.

COST: Total Program: Actual

The Total cost associated with the Physical Therapy program as actually offered in 1974-75 was $822,931. Faculty cost amounted to $326,858 with Other cost of $496,073. The detailed analysis of the Total Cost appears in Appendix L.

COST: Total Program: Per Student per Year: Actual

The total average cost per student of this program based on the "actual" analysis was $2,741. The distribution of the cost among the various teaching responsibility units again can be seen in reference to Table 9. Of the average cost per student per year $927 was found to reside with the full-time faculty members in Physical Therapy (TRU #1). Part-time faculty members in this division contributed to $12 of the cost, with a total for TRU #1 of $939. Other divisions within the School of Allied Medical Professions contributed $79 per student per year with $374 per student per year being attributed to TRU #3, the basic medical sciences. Other faculty from departments within the university contribute $552 per student per year with TRU #4, the independent terminal clinical affiliation, representing $797 per student per year.

The cost per student per year for each of the four years are distributed from years one through four as follows: $1,240, $1,302, $2,577 and $5,854 respectively. The total cost of the four year program per student was determined to be $10,973.

As with other programs the "theoretical" analysis was completed. The assumptions underlying this analysis have been explicated (see Appendix J for details). One may conclude from the results of the analysis that the total cost per student for a four year program could be reduced from $10,973 to $6,183. This represents a significant difference and again would raise, as with some of the other programs, questions of whether the faculty might wish to review the assumptions and ascertain whether the program could be restructured along the lines indicated and economies actually effected without sacrificing quality in the program.

Theoretical Construction: Assumptions and Effects

In the "theoretical" analysis the faculty-student ratio was assumed to be 1-60 in the lecture mode. This is a significant change from the 1-30 which was found in the "actual analysis." The laboratory mode faculty-student ratio remains at 1-15, but there is a change in the faculty-student ratio in the terminal clinical affiliation from 1-1 to 1-3 for the "theoretical" analysis. This change was based on the results of the clinical questionnaire data. The analysis also assumes that all students either "certificate or baccalaureate students" would be involved in the same courses over a two year period and the maximum class size is 60 students.

The effect of restructuring and changing the faculty-student ratios reduces the faculty contact hours provided by the full-time faculty in the lecture mode. The full-time faculty members of the division would be responsible for fewer faculty contact hours in the clinical laboratory mode as well. This change is from 954 faculty contact hours to 240. Because of the change in the total faculty contact hours for the program the percentages remain approximately the same. The part-time faculty members would provide a larger number of faculty contact hours. This increase is from 496 hours to 720 hours. The effect of the change in the faculty-student ratios can be seen in the relationship of the total faculty contact hours that would be necessary to be provided by the total faculty in TRU #1. This is reduced from 2185 to 1320 hours.

There is a slight reduction in the number of faculty contact hours required from other divisons within the School of Allied Medical Professions. This drops from 244 to 134 hours. There also is a slight reduction in faculty contact hours that would be necessary from the basic medical sciences which would be reduced from 990 to 792 hours.

It should be remembered that these reductions are the result of a decrease in student numbers as well as a change in the faculty-student ratios from the "actual" to the "theoretical" analysis. Other departments in the University would be responsible for slightly fewer faculty contact hours. This is a change from 1884 to 1506 hours.

The major change in the faculty contact hours resides in TRU #4, the faculty involved in offering the terminal clinical affiliation. In this case there is a significant decrease in the required number of hours. The change is from 13,320 faculty contact hours to 4440. As can be seen there is a major drop in the total faculty contact hours that would be necessary under the "theoretical" assumptions to offer the curriculum, particularly the faculty-student ratio of 1-3. The total of 8192 faculty contact hours is significantly less than the 18,623 which had been ascertained as occurring in the "actual" curriculum with a faculty-student ratio of 1-1.

Faculty availability also shows some significant changes. Full-time faculty members in the division of Physical Therapy (TRU #1) who were available 17.6% of their time for direct contact in the "actual" analysis while in the "theoretical" analysis they would be available 31.3%. The part-time faculty members would be available less of their time for direct contact. This change is from 100% to 75%. This also assumes that they would have 25% of their time available to prepare for the direct contact for which they are responsible. With these shifts a significant change in faculty requirements can be ascertained.

Full-time faculty equivalents required in the Physical Therapy division (TRU #1) change from 5 to 1 and part-time faculty requirements in the same Teaching Responsibility Unit change from 1.2 to 0.5. The total change is from 6.2 to 1.5 FTE's. This marked reduction in the number of faculty members within the division of Physical Therapy is primarily a result of a change in the faculty-student ratios which would appear to be reasonable assumptions, i.e., one faculty member could lecture to a group of 60 students. There also was a slight reduction in the number of students, a change in the amount of time the faculty member would be available for direct contact, as well as a change in the availability of part-time faculty members. It is doubtful that a single faculty member would have the expertise to teach the entire Physical Therapy curriculum and, therefore, a question must be asked as to what is the minimum number of faculty that are necessary to offer the range of content required in a curriculum. A group of no less than three appears to be the minimum group number that could be expected to function effectively. In order to utilize the available direct contact time of three faculty members, the Physical Therapy division might consider offering more of the curriculum contact hours.

The only other Teaching Responsibility Unit in which there is a significant change is in the case of the terminal clinical affiliation (TRU #4) where 2.3 faculty members on a full-time equivalent basis would be necessary rather than 6.9 as was the case with the "actual" analysis. This change primarily was the result of assuming the faculty-student ratio would change from 1-1 to 1-3.

If one looks now at the overall faculty-student ratio for the total program the change is from 1-15 to 1-26, a significant increase in efficiency. As was noted earlier the impact on cost is marked.

The total average cost per student per year drops from $2,741 to $1,545. The major shifts in these costs are in TRU #1 for full-time faculty members where the change is from $927 per student per year to $154 per student per year. The cost per student per year for part-time faculty increases slightly from $12 to $77. There is little change in the cost of faculty supplied by other divisions of the School of Allied Medical Professions or the basic medical sciences. Additionally, there is not a significant change in the costs per student per year of faculty supplied by the general university departments. As one would suspect there is a major reduction in the cost related to faculty members needed for the terminal clinical affiliation. This cost per student per year component drops from $797 to $332.

The distribution of the cost per student per year over the four year period shifts somewhat. The cost for the first year of the program remains nearly the same, $1,240 for the "actual" analysis and $1,234 in the case of the "theoretical" analysis. The cost of the second year is nearly the same also. The "actual" was $1,302 and the "theoretical" $1,010. There is a significant reduction in the cost of the third year which drops from $2,577 to $1,579. The cost per student per year for the fourth year dropped significantly from $5,854 to $2,060. In the case of the "theoretical" analysis the cost per student per year is more equally distributed over the four years of the students programs than was the case with the "actual" analysis. The percentages for the first through the fourth year are 20, 21, 26 and 33 respectively. This is compared to 11, 12, 24 and 53 respectively in the "actual" analysis.

SUMMARY:

The coverage cost per student per year for the total program in Physical Therapy for 1974-75 was calculated to be $2,741 for an average class size of 75 students. Each student is required to take 2800 contact hours in their four year program. Twenty-two percent of the curriculum was provided by the primary department consisting of five full-time faculty and 1.2 FTE's part-time faculty.

Forty-six percent of the curriculum requiring 4.4 FTE's of faculty is provided by the general university. Fourteen percent of the curriculum is provided by 6.9 FTE's of clinical preceptors. The remaining curriculum is provided by 2.8 FTE's form other allied health and basic science departments. The overall faculty-student ratio was 1-15.

RADIOLOGIC TECHNOLOGY

PROGRAM: Description

Radiologic Technologists are health professionals knowledgeable and experienced in the use of x-rays and radioactive substances for the diagnosis and treatment of disease and injury. They are employed by hospitals, physicians, medical clinics, industrial firms and manufacturers of x-ray equipment and supplies. They also are employed as teachers in schools of radiologic technology which are located in hospitals, junior colleges and universities.

The baccalaureate program in Radiologic Technology offered by the School of Allied Medical Professions combines basic education courses with professional education in order to develop competence as practitioners, educators, and administrators in the field. Radiologic Technologists receive theory and clinical experience in the use of x-rays for diagnostic purposes, employment of radiation for the treatment of disease and radiation therapy and administration of radioactive pharmaceuticals to diagnose or treat disease in nuclear medicine.

PROGRAM: Curriculum Description

The preprofessional phase of this educational program may be obtained at any accredited college or university and should include courses in anatomy, physiology, chemistry, economics, mathematics and physics. The professional education begins during the summer quarter of the Junior year and consists of a blending of professional courses in radiologic techniques and procedures with supportive courses in education and administration. Clinical experience associated with several courses is gained in the Radiology Department of the University Hospitals or in Children's Hospital located in Columbus, Ohio.

Following successful completion of the program, graduates are awarded a bachelor of science degree in Allied Health Professions and are eligible to write the national certification examination according to the bylaws of the American Registry of Radiologic Technologists. A comprehensive outline of the curriculum in Radiologic Technology may be found in Appendix B, in which are listed all the suggested preprofessional and professional courses.

As with the other programs the program cost analysis methodology has been applied. Student contact requirements by Teaching Responsibility Unit, faculty contact hour requirements by TRU, faculty FTE requirements by type within TRU, faculty costs by Teaching Responsibility Unit and other direct and indirect costs have been added to ascertain the total cost of the program which has allowed for the average cost per student per year to be ascertained. The results of the complete analysis are shown in Table 10.

PROGRAM: Student Contact Hours: Actual

By reference to Table 10 it may be seen that the students receive most of their total student contact hours in association with the

Table 10
OSU:SAMP: Cost Study:
Program Cost Analysis: Actual and Theoretical

Division: Radiologic Technology

	ACTUAL		THEORETICAL	
PROGRAM: Student Contact Hours	#	%	#	
TRU #1 Lecture	398	10		
Laboratory	350	8		
Clinic	2046	48		
Total	2794	66		
2	40	1		
3	90	2		
4	-	-		
6	1280	31		
Program Total	4204			
STUDENT: Enrollment				
Class Average	12		12	
Program Total	49		48	
FACULTY: Faculty-Student Ratios				
TRU #1 Lecture	1-9		1-12	
Laboratory	1-10		1-12	
Clinic	1-6		1-6	
TRU #4 Clinic	-		-	
: Faculty Contact Hours	#	%	#	%
TRU #1 Full-Time				
Lecture	285	5	398	8
Laboratory	240	5	350	7
Clinic	811	16	1024	19
Total	1336	26	1772	34
Part-Time	3512	67	3068	59
Total TRU #1	4848	93	4840	93
TRU #2	8	0	8	0
TRU #3	52	1	52	1
TRU #4	-	-	-	-
TRU #6	288	6	288	6
Program Total	5196		5188	
: Faculty Availability				
TRU #1 Full-Time		23.2		30.8
Part-Time		100.0		75.0
: Faculty Requirements	#	%	#	%
TRU #1 Full-Time	3	54	3	51
Part-Time	1.8	32	2.1	35
Total	4.8	86	5.1	86
TRU #2	0	0	0	0
TRU #3	.1	2	.1	2
TRU #4	-	-	-	-
TRU #6	.7	12	.7	12
Program Total	5.6		5.9	
: Faculty-Student Ratio				
Program Total	1-9		1-8	
COST PER STUDENT: Total Program Per Student Per Year				
Average	$	%	$	%
TRU #1 Full-Time	2321	62	2335	51
Part-Time	803	21	1635	35
Total	3124	83	3970	86
TRU #2	0	0	0	0
TRU #3	104	3	106	2
TRU #4	-	-	-	-
TRU #6	538	14	549	12
Program Total	3766		4625	
By Year	$	%	$	%
1	1240	8	1266	7
2	1134	8	1158	6
3	7073	47	9000	49
4	5618	37	7077	38
Total Program Cost per Student	15,065		18,501	

Radiologic Technology division (TRU #1). This unit is responsible for 66% (2794) of the student contact hours, 10% (398) hours are in lecture, 8% (350) hours are in laboratory and 48% (2046) hours are in clinic. Students receive only 1% (40 hours) of their student contact hours in association with TRU #2, other divisions in the School of Allied Medical Professions. An additional 2% (90 hours) is received from the basic medical sciences (TRU #3). There are 31% of the student contact hours (1280 hours) which are derived from the faculty of the general university departments (TRU #6).

STUDENT: Enrollment: Actual

In the Radiologic Technology program there were an average of 12 students per class with a total enrollment of 49 students for the four year period of the program.

FACULTY: Student Ratios: Actual

The faculty-student ratio in the lecture mode presented in TRU #1 were 1-9, laboratory mode 1-10 and clinic mode 1-6.

FACULTY: Contact Hours: Actual

Faculty contact hours for TRU #1 represent 93% (4848 hours) of the total for the program (5196 hours). Full-time faculty members in the department provide 26% of the total faculty contact hours. By mode this represents 5% (285 hours) in lecture, 5% (240 hours) in laboratory and 16% (811 hours) in the clinic mode for a total of 1336 hours. It is important to note, however, as ascertained using the didactic questionnaire, that there is extensive use of guest lecturers in the lecture and laboratory modes of TRU #1. Part-time faculty members are responsible for delivering 67% (3512 hours) of the faculty contact hours in the curriculum. Faculty contact hours delivered by all of the rest of the Teaching Responsibility Units (348) represent only 7% of the total for the curriculum. TRU #2 (other School of Allied Health divisions) delivers 8 hours (0%). TRU #3, basic medical sciences delivers 52 hours (2%). The rest of the faculty in the university are responsible for delivering 288 faculty contact hours which represents 6% of the total for the program.

FACULTY: Availability: Actual

Full-time faculty members in the division of Radiologic Technology were available 23.2% of their time for direct contact. Part-time faculty members were considered to be available 100% of their time.

FACULTY: Requirements: Actual

The faculty available for this program in Radiologic Technology on a full-time basis were 3, on a part-time basis 1.8 FTE's, for a total of 4.8 FTE's in TRU #1. The contribution of faculty by other divisions in the School of Allied Medical Professions (TRU #2) was so small as to be essentially zero when expressed as full-time equivalents. One-tenth of one FTE of a full-time faculty member was necessary from the basic medical sciences (TRU #3) and 0.7 of an FTE faculty member utilized from the rest of the university (TRU #6), for a total for the program of 5.6 FTE's. The faculty-student ratio for the total program was 1-9.

COST: Total Program: Actual

The total cost associated with the Radiologic Technology program as actually offered in 1974-75 was $184,542. Faculty cost amounted to $77,778 with Other cost of $106,764. The detailed analysis of the Total Cost appears in Appendix L.

COST: Total Program: Per Student per Year: Actual

The average cost per student per year by Teaching Responsibility Unit is distributed as might be expected with the major cost residing in TRU #1. For full-time faculty members 62% of the total cost per student per year of the program is represented in cost related to the full-time faculty members. This amounts to $2,321. Part-time faculty contributed 21% of the cost, which represents $803 for a total in TRU #1 of $3,124 (83%). TRU #2 contributes essentially no cost, while the basic medical sciences adds $104 (3%) to the total cost per student per year. Other departments in the university are responsible for contributing $538 (4%) of the average total cost per student per year of $3,766.

These costs are distributed over the four year program. For the Freshman through the Senior year the costs are $1,240, $1,134, $7,073 and $5,618 for a total cost of the four year program for each Radiologic Technology student of $15,065. The major percentage of the cost resides in the Junior and Senior years, the professional phase of the program.

Theoretical Construction: Assumptions and Effects

As with the other programs the procedures for constructing the "theoretical" analysis were applied to data from the Radiologic Technology program. In the "theoretical" analysis for this program, enrollment was considered to be 12 students per class or 48 students totally. There was an increase in the faculty-student ratio for the lecture mode in TRU #1. The assumption was that the ratio would be 1-12 rather than 1-9. For the laboratory setting, the assumption was that a ratio of 1-12 rather than 1-10 would be utilized. In the clinic mode the faculty-student ratio was considered to remain as it had been in the "actual" analysis, i.e., 1-6. Faculty contact hours, as a result of the "theoretical" analysis, reflect some slight changes.

The assumption was made that availability of faculty members in TRU #1 would change. The full-time faculty members, instead of being available 23.2% of their time, were assumed to be available 30.8% of their time for direct contact. Part-time faculty members were considered to be available 75% rather than 100% of their time in the "theoretical" analysis. This has an interesting effect on the faculty contact hours. Total faculty contact hours delivered by the full-time faculty members changed from 1336 in the "actual" to 1772 in the "theoretical." Faculty contact hours in each of the modes increases respectively in lecture, laboratory and clinic as follows: 285 to 398, 240 to 350 and 811 to 1024. Faculty contact hours provided by part-time faculty, using the assumptions outlined, decreases from 3512 to 3068. While there is a slight reordering in the distribution of the faculty contact hours in the "theoretical" analysis, this still represents 93% of the total curriculum with no changes in the TRU #2, 3, or 6. Total faculty contact hours for the "theoretical" construction remains nearly the same, 5188 as compared with 5196 in the "actual" analysis.

The only faculty requirements which change are in TRU #1, where 3 full-time faculty members are necessary. There is a slight increase in the number of part-time faculty members necessary. This increase is from 1.8 to 2.1. This is essentially the result of modifying the percentage of time that faculty members are available for direct contact.

It should be noted that by assuming that part-time faculty members have some preparation time, the quality of instruction which they provide should increase.

It is important to note that the overall faculty-student ratio in the "theoretical" is 1-8 while in the "actual" it is 1-9. The major change in the faculty-student ratio is a result of the increased use of full-time faculty members who would be available, under the assumptions of the "theoretical" analysis, for a larger percentage of their time for direct contact. It is interesting to note in this particular program that the cost created by a different assumption regarding the availability of part-time faculty members for direct contact is not offset by the increased efficiency of moving the lecture mode and laboratory mode to higher faculty-student ratio and increasing the availability of full-time faculty members for direct contact. This can be explained because the part-time faculty members were responsible for delivering 67% of the total faculty contact hours in the "actual" analysis and 59% in the "theoretical" analysis. Therefore, their faculty contact hours and availability impact heavily on the total cost of the program.

The major shift in the average cost per student per year will be seen to reside with the cost of part-time faculty in TRU #1. This increase is from $803 to $1,635. There are only very modest shifts in any of the other Teaching Responsibility Units. The change in cost for the total program on a per student per year basis increases from $3,766 to $4,625. The distribution of the cost for the Freshman and Sophomore years is nearly the same; however, the cost of the Junior year on a per student basis increases from $7,073 to $9,000. In the Senior year the cost would increase from $5,618 to $7,077. As with the "actual" analysis the major cost per student in the Junior and Senior is the highest level and significantly different than the Freshman and Sophomore years.

The assumptions that were made result in a fairly significant increase in the cost per student. Before implementing such an alteration consideration should be given to whether the changes would produce a significant increase in the quality of the student product.

SUMMARY:

The average cost per student per year for the total program in Radiologic Technology for 1974-75 was calculated to be $3,766 for an average class size of 12 students. These students are required to take 4204 contact hours in their four year program. Sixty-six percent of the curriculum was provided by the primary department consisting of three full-time faculty members and 1.8 FTE part-time faculty. An additional 0.8 FTE's of faculty from basic science and general university departments were required to offer the curriculum. The overall faculty-student ratio was 1-9.

RESPIRATORY TECHNOLOGY

PROGRAM: Description

Representing a new and rapidly developing allied health discipline, the respiratory technologist or inhalation therapist is responsible for the in-depth care of patients who suffer from respiratory problems such as asthma, cystic fibrosis and pulmonary emphysema. The American Association for Inhalation Therapists consists of over 10,000 persons active in the varied administration of therapeutic gases and aerosols. As the competence of the representative therapists is enhanced by the development of related educational programs, an increasing number of responsibilities are delegated to these practitioners. Technically these duties in cooperation with nursing and several other allied health disciplines include long term maintenance of the ventilatory environment by mechanical means; pulmonary physical, therapeutic and rehabilitative modalities; and pulmonary function, diagnostic and monitoring techniques. These duties are primarily performed in the hospital but are increasingly practiced within the home, community clinic or extended care facility.

PROGRAM: Curriculum Description

Graduates of the baccalaureate program represent special competence in one of several areas including education, administration and research. The discipline in general offers opportunities for professional service and advancement to those who are concerned with care for respiratory patients of all ages and the alleviation of their illnesses. Students are considered for admission to the Respiratory Technology division of the School of Allied Medical Professions at the Sophomore level or beyond after having completed selected course work in areas such as biology, English, mathematics, chemistry and psychology. Normally, application may be made after completion of two college quarters.

During the final three college years the student concentrates effort in theoretical and clinical experience courses in Respiratory Technology, individual and group studies related to this discipline, basic courses in administration and education and an individually selected area of concentration in education, management, or further technical investigation. For a complete outline of the suggested pre-professional and professional courses, please refer to Appendix B.

In a step by step fashion the methodology was applied and the data collected regarding the Respiratory Technology program (see Table 11).

PROGRAM: Student Contact Hours: Actual

Student contact hours were determined. In TRU #1 these students receive 300 contact hours in lecture mode, 320 hours in the laboratory mode and 1040 hours in the clinic mode. Total student contact hours in TRU #1 were 1660. This represented 47% of the total contact hours (3500) in the program. Students receive no student contact hours in TRU #2. They received 350 student contact hours or 10% or the total in TRU #3, the basic medical sciences. From other departments in the general university, students were involved in 1490 student contact hours. This represented 43% of the total.

Table #11
OSU:SAMP: Cost Study:
Program Cost Analysis: Actual and Theoretical

Division: Respiratory Technology

	ACTUAL		THEORETICAL	
PROGRAM: Student Contact Hours	#	%	#	
TRU #1 Lecture	300	9		
Laboratory	320	9		
Clinic	1040	29		
Total	1660	47		
2	-	-		
3	350	10		
4	-	-		
6	1490	43		
Program Total	3500			
STUDENT: Enrollment				
Class Average	10		12	
Program Total	41		48	
FACULTY: Faculty-Student Ratios				
TRU #1 Lecture	1-9		1-12	
Laboratory	1-10		1-12	
Clinic	1-4		1-4	
TRU #4 Clinic	-		-	
: Faculty Contact Hours	#	%	#	%
TRU #1 Full-Time				
Lecture	300	8	300	7
Laboratory	320	8	320	8
Clinic	1180	29	780	18
Total	1800	45	1400	33
Part-Time	1754	44	2340	55
Total TRU #1	3554	89	3740	88
TRU #2	-	-	-	-
TRU #3	135	3	161	4
TRU #4	-	-	-	-
TRU #6	305	8	366	8
Program Total	3994		4267	
: Faculty Availability				
TRU #1 Full-Time		31.3		24.3
Part-Time		100.0		75.0
: Faculty Requirements	#	%	#	%
TRU #1 Full-Time	3	61	3	52
Part-Time	.9	19	1.6	27
Total	3.9	80	4.6	79
TRU #2	-	-	-	-
TRU #3	.3	6	.4	7
TRU #4	-	-	-	-
TRU #6	.7	14	.8	14
Program Total	4.9		5.8	
: Faculty-Student Ratio				
Program Total	1-8		1-8	
COST PER STUDENT: Total Program Per Student Per Year				
Average	$	%	$	%
TRU #1 Full-Time	2437	62	2167	50
Part-Time	500	13	1156	26
Total	2937	75	3323	76
TRU #2	-	-	-	-
TRU #3	374	9	426	10
TRU #4	-	-	-	-
TRU #6	643	16	627	14
Program Total	3954		4376	
By Year	$	%	$	%
1	1264	8	1234	7
2	1783	11	1928	11
3	4515	29	7723	44
4	8254	52	6619	38
Total Program Cost per Student	15,816		17,504	

STUDENT: Enrollment: Actual

During the year of the study (1974-75) there were 10 students per class with a total of 41 in the program.

FACULTY: Student Ratios: Actual

Faculty-student ratio for TRU #1 in the lecture mode was 1-9, in the laboratory mode 1-10 and in the clinic mode 1-4.

FACULTY: Contact Hours: Actual

The major portion of the faculty contact hours (89%) resided with the Respiratory Therapy division (TRU #1). Full-time faculty members provided 300 faculty contact hours in the lecture mode, 320 in the laboratory mode and 1180 in the clinic mode for a total of 1800 faculty contact hours. These hours represented 45% of the total for the program. Part-time faculty members in TRU #1 were responsible for delivering 1754 contact hours which represented 44% of the total. TRU #1 delivered 89% or 3554 faculty contact hours. No faculty contact hours were delivered by other faculty members in the School of Allied Medical Professions (TRU #2). In the basic science departments (TRU #3) there were 135 faculty contact hours delivered which represented 3% of the total hours taught. TRU #6 (the general university) was found to contain 305 faculty contact hours which represents 8% of the total for the program.

FACULTY: Availability: Actual

Faculty availability for direct contact in TRU #1 for full-time faculty was found to be 31.3% and assumed to be 100% for part-time faculty members.

FACULTY: Requirements: Actual

Faculty requirements for this program totaled 4.9 FTE's. These were distributed in large measure, as one might expect, in TRU #1. Full-time faculty members in this Teaching Responsibility Unit numbered 3 FTE's and part-time faculty members represented 0.9 FTE's. This total of 3.9 FTE's represents 80% of the faculty requirements for the total program. TRU #3 contributed 0.3 FTE's which represented 6% of the total of 4.9 FTE's. The other departments in the general university (TRU #6) contributed 0.7 FTE's or 14% of the total. For the program as a whole, the faculty-student ratio was 1-8.

COST: Total Program: Actual

The total cost associated with the Respiratory Technology program as actually offered in 1974-75 was $162,130. Faculty cost amounted to $70,825 with Other cost of $91,305. The detailed analysis of the Total Cost appears in Appendix L.

COST: Total Program: Per Student per Year: Actual

Since the major portions of the faculty contact hours are delivered by the faculty members of the Respiratory Technology division, most of the cost resides there. This, in fact, is reflected in the data, i.e., 75% of the average cost per student per year resides within TRU #1. Full-time faculty related costs contribute $2,437 (62%) of the total for the program which was determined to be $3,954. Part-time faculty members add another $500 (13%) to the total cost. The basic medical sciences contributed $374 (TRU #3) and an additional $643 are contributed to the cost by the departments in the general university (TRU #6). These costs are distributed from the Freshman through Senior years respectively as follows: $1,264, $1,783, $4,515 and $8,254. The total cost for the four year program on a per student basis was $15,816. As can be seen from the above data 52% of the cost resides in the Senior year, 29% in the Junior year, 11% in the Sophomore year and only 8% in the Freshman year.

Theoretical Construction: Assumptions and Effects

As with the other programs a "theoretical" analysis was completed. There were several basic assumptions regarding this analysis, the first of which was that the student enrollment per class would increase from 10 to 12 students. Thus the total for the program would be 48 rather than 41 which was determined in the "actual" analysis. There were some assumed changes in the faculty-student ratios. For example, in the lecture mode the faculty-student ratio was assumed to be 1-12 in the "theoretical" analysis. It had been 1-10 in the "actual" analysis. The same ratio of 1-12 was applied to the laboratory setting. The clinical setting remained the same in the "theoretical" analysis as it had been in the "actual" analysis, 1-4. Faculty contact hours for full-time faculty members in TRU #1 remained the same, 300 hours which represented in the "theoretical" analysis 7% of the total for the program. Faculty contact hours in the laboratory mode in TRU #1 also remained the same (320 hours). There was a significant change however, in the faculty contact hours in the clinic mode. This change from 1180 to 780 hours is due to the assumptions in the "theoretical" construction that full-time faculty should cover 25% of clinic hours. Total faculty contact hours for the full-time faculty in TRU #1 decreased from 1800 to 1400 hours. Part-time faculty members were responsible for an increased number of faculty contact hours in the "theoretical" analysis. This increased from 1754 to 2340 hours. It is interesting to note that the Respiratory Technology department in both the "actual" and "theoretical" analysis was responsible for nearly the same percentage of the total faculty contact hours. There was, however, a slight increase in the hours in the "theoretical" analysis. This increase was from 3554 to 3740 hours. There was a very small change in faculty contact hours provided by the basic medical sciences. This increased from 135 to 161 hours. The major effect is the result of the increased enrollment per class size. This effect also applied to TRU #6. In this case, the faculty contact hours increased from 305 to 366 hours.

The faculty requirements for the "theoretical" analysis remained at 3 FTE's for the full-time faculty but increased from 0.9 to 1.6 FTE's for part-time faculty in TRU #1. Therefore, the total full-time faculty equivalents necessary in the Respiratory Technology division increased from 3.9 to 4.6 FTE's. In TRU #3 the increase was from 0.9 to 1.6 FTE's in TRU #6 from 0.7 to 0.8 FTE's. The total difference from the "actual" to the "theoretical" analysis was from 4.9 FTE's to 5.8 FTE's, an increase of 0.9 FTE's.

The distribution of faculty requirements in the "actual" versus the "theoretical" analysis when considered by Teaching Responsibility Unit and its sub-categories remained essentially the same. Overall the faculty-student ratio for both the "actual" and "theoretical" analysis was 1-8.

The average cost per student per year changed slightly in the "theoretical" analysis. There was an increase for the total program from $3,954 to $4,376. As would be expected the increase resided mainly in TRU #1, where the cost for full-time faculty members decreased slightly, but the cost for part-time faculty members increased significantly. These "theoretical" assumption changes resulted in a reduction in the direct contact availability of full-time faculty members in TRU #1 where there was a decrease from 31.3% in the "actual" analysis to 24.3% in the "theoretical" analysis. It also should be remembered that the same assumption that part-time faculty members would be available 75% of their time for direct contact with an additional 25% for preparation applies in this case.

As noted earlier there was a significant decrease in the amount of time that the full-time faculty members spent in clinical contact, which resulted in a need for an increase in part-time faculty members as reflected in the requirements shown for the "theoretical" analysis.

The cost per student per year from the Freshman through Senior year respectively was $1,234, $1,928, $7,723, $6,619. The total cost of $17,504 for the four year program was the average for each student. This represented an increased cost of $1,600 per student for the four year program.

SUMMARY:

The average cost per student per year for the total program in Respiratory Technology for 1974-75 was calculated to be $3,954 for an average class size of 10 students. Each student is required to have

3500 contact hours in the four year program. Forty-seven percent of the curriculum was provided by the primary department consisting of three full-time faculty members and 0.9 FTE part-time faculty. An additional 1.0 FTE of faculty from the basic science and general university departments was required to offer the curriculum. The overall faculty-student ratio was 1-8.

III. B. Elements: Analysis

After the analysis of all of the programs had been completed, it was determined that an element by element review of the data from all programs might be helpful in an effort to identify important relationships which otherwise might be missed in viewing only the data on a program by program basis. Therefore, the following sections with discussion and observations by element provide an overview of some of the interesting relationships which appear to exist between the cost related factors and curriculum design and raise questions which require further investigation. The elements are presented in the sequence as they are described in the program cost analysis procedure, namely:

1. Program: Student Contact Hours
    - Primary Department: Rank and Percent
        - : Required vs. Offered
    - Total Program

2. Student: Enrollments: Rank and Percent

3. Faculty: Faculty-Student Factors
    - : Faculty Contact Hours
        - Primary Department: Mode
            - : Structure
        - Total Program
    - : Faculty Availability for Direct Contact
    - : Faculty Requirements: Type and Total Program
        - : S-F Ratios
    - : Faculty Salaries

4. Cost: Total Program Cost
    - : Per Student Per Year: Average
        - : By Year
        - : By Year Percentage

Student Contact Hours for the Primary Department (TRU #1)

The first of the elements, student contact hours, is outlined in Table 12. Data for each division are ranked by the total number of hours that students in each of the programs are required to be in contact with faculty members in that primary department (division), i.e., TRU #1. Medical Record Administration students are in contact with faculty from their division the lowest number of hours (597) and Radiologic Technology students the highest number of hours (2794).

It is interesting to note that, based on the percentage of the total student contact hours in the program, four divisions are responsible for over half of the student contact hours in which students in their programs enroll. This obviously gives students an increased opportunity for contact with the faculty members in their profession. Questions may be raised, however, regarding whether these students' total educational perspective is narrowed with such a large percentage of time spent with a relatively few faculty members in the students chosen profession. The strengths which might come from exposure to a wide variety of faculty members available in a university setting may be missed with this arrangement.

It also might be asked whether students should obtain some of the content which is currently being provided by faculty in their division from other faculty who have greater expertise in specific academic disciplines. Stating the question in another way, is the faculty in the professional division teaching content that is really the providence

Table 12

OSU:SAMP:Cost Study: Program Cost Analysis: Student Contact Hours for Primary Department (TRU #1)
Actual 1974-75

	STUDENT CONTACT HOURS (SCH)					
			Percent of SCH in			
Program	Total Number SCH	Rank Order SCH	Lecture	Laboratory	Clinic	SCH Percent of Total Program Hours
1. Circulation Technology	1720	8	31	31	38	53
2. Medical Communications	610	3	39	12	49	27
3. Medical Dietetics	1677	7	29	-	71	51
4. Medical Illustration	1190	5	28	70	2	33
5. Medical Record Administration	597	1	68	5	27	23
6. Medical Technology	1950	9	18	62	20	52
7. Occupational Therapy	850	4	47	31	22	20
8. Physical Therapy	600	2	60	40	-	22
9. Radiologic Technology	2794	10	14	13	73	66
10. Respiratory Technology	1660	6	18	19	63	47
Average	1365					

of other disciplines in the university? Accreditation site visit teams or a multi-disciplinary curriculum review committee could possibly study this matter and make some suggestions which might strengthen the various programs, if appropriate. The potential problem resulting from offering such a large proportion of the curriculum may be of even greater relevance in a program where there are only a few full-time faculty members. For example, there are only three full-time faculty members in Radiologic Technology and yet they are responsible for the teaching of 66% of the student contact hours of the students enrolled in this program. It might not be nearly as significant in a division such as Medical Dietetics where students receive 51% of the total of their student contact hours from the division's faculty but where there are 11 full-time faculty members. (Refer to Program Tables for Detailed Analysis).

In comparison with other divisions, another question could be posed. In Medical Record Administration where the faculty was responsible for 23% of the total student contact hours in the program, most of the content offered by the full-time faculty was in the lecture mode. Would it be more useful to have increased laboratory experience which, in this division, accounted for only 5% of the student contact hours in the curriculum as it was structured in 1974-75? There can be no question that the lecture mode is more efficient and, therefore, less costly; however, is this an appropriate mix of lecture and laboratory? The faculty can address this question and should reaffirm their decision to continue in this manner or explore possible changes in the curriculum.

It is apparent from reviewing the information (Table 12) that the Medical Dietetics students spend no time in laboratory experiences and a large proportion of time in the clinical setting. The faculty might wish to consider whether there can be effective uses of laboratory type experiences in this program which might add to program quality. Again this should be a faculty decision but data presented in this manner can be used to identify areas such as these where questions should be raised.

Essentially, as a part of their undergraduate experience within the School of Allied Medical Professions, the Physical Therapy students spend no time in the clinical mode as a part of their experiences within the Medical Center. It should be remembered that their major clinical experiences were defined in this study as terminal clinical affiliations and that many hours are subsumed under this category. The question raised, however, is whether there are ways in which a more integrated clinical and theoretical experience could be designed. While this might result in increasing the cost, it might add to effectiveness in terms of the quality of the program by allowing for more timely application of theory to practice.

Another question which might be raised is "What percent of the program curriculum should be taught by primary department?" There appears to be no obvious generalization as to the percentage of the total student contact hours that should be taught by the primary department. The students exposure to the disciplines professionals varies by program and the relative quantity of time which the students spend with them in the primary department and clinic. The important outcome of the analysis of the data is the ability of this issue to be considered and an active decision made. In general this issue probably has not been considered and it should be. Data obtained from an analysis such as this one allows for this consideration.

Student Contact Hours Required Versus Offered for Each Primary Department

In Table 13 the reader may review,program by program, the "required" student contact hours and the "offered" student contact hours listed by instructional mode. One of the observations made, as the data was being collected, was that all of the divisions, except Respiratory Technology, offered more courses than were required in the student's program of study. There were courses offered which all students did not have to take. Therefore, any individual student had a choice. Also, some courses were offered more than once a year and students either scheduled them at one time or another. In both cases the extra offering may have been justified or necessary but there were obviously major economic impacts which were related to offering these courses.

Admitting multiple classes during the year or admitting students out of sequence may be a part of the situation that contributes to this problem. A mixture of baccalaureate and postgraduate baccalaureate programs also could add to this effect. In considering cost effectiveness, it may be concluded that it is more efficient to admit only one group of students one quarter a year and schedule them sequentially in courses, thus avoiding the duplication of course offerings. Given other factors which impinge upon programs, this may not be possible. However, policies such as these do contribute to the total cost of programs.

Table 13
OSU:SAMP: Program Cost Analysis: Student Contact Hours Required vs. Offered for Primary Department
Actual 1974-75

	STUDENT CONTACT HOURS (SCH)									
	Required SCH				Offered SCH				Difference (Offered-Required)	
Program	Lecture	Lab	Clinic	Total	Lecture	Lab	Clinic	Total	Lecture	Total
1. Circulation Technology	540	530	650	1720	960	872	2700	4532	420	2812
2. Medical Communications	240	70	300	610	340	70	300	710	100	100
3. Medical Dietetics	482	-	1195	1677	629	-	1665	2294	147	617
4. Medical Illustration	333	835	22	1190	747	1186	47	1980	414	790
5. Medical Record Administration	407	30	160	597	427	30	160	617	20	20
6. Medical Technology	350	1210	390	1950	440	1270	1560	3270	90	1320
7. Occupational Therapy	410	260	180	850	474	300	220	994	64	144
8. Physical Therapy	360	240	-	600	790	380	120	1290	430	690
9. Radiologic Technology	398	350	2046	2794	408	350	2046	2804	10	10
10. Respiratory Technology	300	320	1040	1660	300	320	1040	1660	0	0

In looking at the difference between the courses offered and the courses required in the lecture mode, it is apparent that three divisions, Circulation Technology, Medical Illustration and Physical Therapy, offered over 400 more student contact hours than were required. When one looks at the totals, one program, Circulation Technology, offers 2812 more hours than were required. Medical Illustration offers 790, Medical Dietetics 610, Medical Technology 1320 and Physical Therapy offers 690 more than the required. These certainly are significant numbers and indicate that a very careful review of the academic soundness of a curriculum design which leads to this situation is warranted.

Student Contact Hours for Total Program

In Table 14 student contact hours for each program are displayed by Teaching Responsibility Unit and expressed as a percentage of the total for each program. The totals also are shown ranked in order of the total student contact hours. Radiologic Technology has the highest number of student contact hours (4204) and Medical Communications the lowest (2285). It is interesting to note that the lowest has 1919 hours less than the highest. Thus the total for the lowest is nearly half the total for the highest. What implications does this have? One point, of course, is that students in the Medical Communications Division have much more time to prepare for classes than the students in Radiologic Technology. It may be necessary to ask what effect this has on the educational experience which students may expect to gain from their complete educational program. This point should be considered as any faculty evaluates the impact of student contact hours on students enrolled in its program.

In reviewing the data, it is obvious that students gain a significant portion of their student contact hours from faculty members within the general university. It also is important to note that students have much less opportunity to come into contact with faculty members from other allied health disciplines than perhaps might be useful. In some cases there is very little (perhaps too little) contact with faculty members from the basic medical sciences. As an example, in Radiologic Technology only 2% of the student contact

Table 14

OSU:SAMP:Cost Study: Program Cost Analysis: Student Contact Hours for Total Program
Actual 1974-75

Program	Total Number SCH	Rank Order SCH	Percent of SCH in TRU #1	TRU #2	TRU #3	TRU #4	TRU #6
1. Circulation Technology	3250	4	53	-	5	-	42
2. Medical Communications	2285	1	27	6	10	-	63
3. Medical Dietetics	3277	5	51	1	10	-	38
4. Medical Illustration	3640	7	33	1	12	-	55
5. Medical Record Administration	2597	2	23	7	6	16	48
6. Medical Technology	3740	8	52	-	9	-	39
7. Occupational Therapy	4190	9	20	6	8	35	31
8. Physical Therapy	2800	3	22	7	11	14	46
9. Radiologic Technology	4204	10	66	1	2	-	31
10. Respiratory Technology	3500	6	47	-	10	-	43
Average	3348						

hours are in the basic medical sciences (TRU #3), Circulation Technology has only 5%.

A review of this information might be very instructive in considering the lack of participation of students in common courses offered by the School of Allied Medical Professions in particular. The faculty and administration should recognize that important economies can be obtained by the use of common courses. Again, as financial and other resources become more difficult to obtain, such moves to greater economy will need to be considered in a very straight forward and careful manner, but always with consideration given to program quality.

Cost effective implications are related more to the distribution of the faculty contact hours than of the student contact hours. However, the quality of the educational experiences which the students receive may well be related to the variety of quality faculty members with whom the student comes in contact.

Thus far this discussion has focused on possible changes that should be considered. Let us now identify strengths that may be perceived from this display of the data. It is obvious that the students have a fairly great opportunity to have extensive contact with the faculty of their chosen profession. Therefore, it may be assumed that students have a good opportunity to observe the role models that these faculty members represent. Students also should have ample opportunity to obtain answers to questions that might accrue relative to their discipline.

With the exception of three programs (Medical Record Administration, Occupational Therapy, and Physical Therapy), the major component of the clinical experience occurs in the University Hospitals or in facilities in the Columbus area. The three programs mentioned above use what has been defined as a terminal clinical experience for their students. This may make it more difficult for careful integration between the didactic and clinical components. Depending upon the quality of organization, preparation and integration of faculty teaching in the various clinical sites, this problem might be overcome.

In most programs students have a good opportunity to come in contact with other faculty members in the general university. Contact with these faculty members should be an added strength since it provides a wider academic base. For the programs studies, the lowest percentage observed was 31%, the highest 63%. All in all, it is important for the faculty members to review data such as these in an effort to decide what balance is appropriate for the discipline in question. The number of faculty members required and the curriculum which the students must learn as a part of their total experience must be carefully weighed.

Student Enrollment and Cost

Looking at student enrollments both number per class and total, in conjunction with the average cost per student per year, there are some interesting relationships which may be noted. The data is displayed in Table 15 with the programs rank ordered on total students in the program. Generally speaking there tends to be a relationship in most cases between the highest number of students and the lowest average cost per student per year. The major exceptions to this are Respiratory Therapy, Radiologic Technology and Occupational Therapy. In reviewing the relationship between the student enrollment numbers and the average cost per student per year, the key question may be "What is the minimum number of students necessary before a program should be offered?" This has major implications with regard to the economies of scale and also to the national, state or regional manpower needs.

For example, if it costs $9,029 per year for each of four years to educate a medical illustrator and there are only five students in this program, how many programs are needed in the United States? Are there cost effective measures which could be undertaken if there were larger numbers of students in fewer programs? There is no easy answer to this question since the cost of this program appears to be high because of the large measure of individual instruction which students in this discipline need.

A definite answer as to whether a program designed for larger numbers of students would be more cost effective cannot be determined

Table 15

OSU:SAMP:Cost Study: Program Cost Analysis: Student Enrollments and Costs Actual 1974-75

Program	Student Enrollment Per Class Number	Program Total	Rank Order	Average Total Cost/Student $	Total Program Cost $
1. Circulation Technology	11	44	3	5,007	220,308
2. Medical Communications	15	61	6	3,141	191,601
3. Medical Dietetics	25	99	7	4,433	438,867
4. Medical Illustration	5	19	1	9,029	171,551
5. Medical Record Administration	13	51	5	3,948	201,348
6. Medical Technology	27	109	8	4,078	444,502
7. Occupational Therapy	49	194	9	5,775	1,120,350
8. Physical Therapy	75	300	10	2,741	822,300
9. Radiologic Technology	12	49	4	3,766	184,534
10. Respiratory Technology	10	41	2	3,954	162,114
All Programs		967		4,093	3,957,475

on the basis of the data herein. A faculty using the methodology that is presented in this report might be able to ascertain the answer to this question, however.

The inquiry is especially pertinent with regard to Medical Dietetics. As noted earlier (see Program Tables for details), using the theoretical construction analysis, the cost could be significantly decreased. A decrease also was suggested as being possible in Medical Illustration and in Occupational Therapy. This was not true, however, of the Circulation Technology program under the theoretical assumptions.

Student Group Size Per Faculty for Primary Department by Predominant Instructional Modes

The student group size per faculty member ranges from one student per faculty member in both the clinic and lecture mode for Medical Illustration to 36 students per faculty member in the lecture mode for Occupational Therapy. Data displayed in the way (See Table 16) did not appear to be particularly helpful in understanding the relationships of group size per faculty member to cost. For example, Physical Therapy, which is one of the low cost programs, has 30 students per faculty member in the lecture mode and Occupational Therapy, which is one of the higher cost programs, has 36. Additionally, Circulation Technology, a high cost program, has 6 students per faculty member in the lecture mode, with Medical Dietetics having 9, and yet it is one of the lower cost programs. The cost factors appear more clearly in other elements where one can look more directly at the efficiencies than when data is displayed in this manner. In general, however, the larger the group size per faculty member, the lower is the cost as can be seen by inspection of the data displayed in Table 16.

Table 16

OSU:SAMP:Cost Study: Program Cost Analysis: Per Faculty Student Group Size Factors for Primary Department
Actual 1974-75 Related to Cost per Student

	Primary Department Student Group Size by Predominant Instructional Mode			Average Cost per Student	
Program	Lecture	Laboratory	Clinic	Rank Order	$
1. Circulation Technology	6	6	2	8	5,007
2. Medical Communications	9	7	1	2	3,141
3. Medical Dietetics	13	-	6	7	4,433
4. Medical Illustration	1	2	1	10	9,029
5. Medical Record Administration	13	13	2	4	3,948
6. Medical Technology	28	10	2	6	4,078
7. Occupational Therapy	36	25	3	9	5,775
8. Physical Therapy	30	15	-	1	2,741
9. Radiologic Technology	9	10	6	3	3,766
10. Respiratory Technology	10	10	4	5	3,954

Faculty Contact Hours for Primary Department Full-Time Faculty Members

The data for this element are displayed in Table 17. It is interesting to note that there is such a wide range of faculty contact hours provided by the full-time faculty members in the primary Teaching Responsibility Units. For example, Medical Communications full-time faculty members are responsible for 430 faculty contact hours while the Medical Illustration faculty is responsible for 3055. This total for Medical Illustration represents 86% of the total faculty contact hours in the curriculum, while for Medical Communications it represents only 13%. Since 91% of the contact hours which are delivered by the Medical Communications faculty are in the lecture mode, it would appear that sufficient amount of time would be available for these faculty members to participate in many other kinds of activities. It should be noted that Medical Communications faculty also spent no percentage of their time in contact with students in the clinical setting. Not shown in the Table is the fact that the faculty does need to spend some time preparing for students to participate in these clinical sites.

The most striking observation in the Table is the amount of time that various faculties spend in the clinic. It has been the goal of the School of Allied Medical Professions to have all of its faculty members involved in providing some patient care in the clinical setting. The time represented in this Table is direct contact instruction of students in the clinical setting and not necessarily related to the

Table 17

OSU:SAMP:Cost Study: Program Cost Analysis: Faculty Contact Hours for Primary Department Full-Time Faculty Actual 1974-75

FACULTY CONTACT HOURS (FCH) for Full-Time Faculty

Program	TRU #1 Total FCH	Rank Order	Percent of Hours in			Percent of Total Program Hours
			Lecture	Laboratory	Clinic	
1. Circulation Technology	1974	7	49	45	6	33
2. Medical Communications	430	1	91	9	-	13
3. Medical Dietetics	3076	10	26	-	74	47
4. Medical Illustration	3055	9	43	53	4	86
5. Medical Record Administration	507	2	84	6	10	10
6. Medical Technology	2218	8	12	88	-	20
7. Occupational Therapy	801	3	63	31	6	2
8. Physical Therapy	1689	5	36	57	7	9
9. Radiologic Technology	1336	4	21	18	61	26
10. Respiratory Technology	1800	6	17	18	65	45
Average	1689					

provision of patient care although it may be assumed that some patient care results from the efforts of these faculty members in the instruction of the students in the clinical settings. It is important to note that neither Medical Communications nor Medical Technology participate in this activity and that the percentage of the contact hours spent by Circulation Technology, Medical Illustration, Occupational Therapy and Physical Therapy in the clinical mode of instruction is low ranging from 4% to 7%.

It also is important to note how much time is spent by Medical Dietetics, Radiologic Technology and Respiratory Technology faculty members in providing instruction in the clinical mode. This ranges from 61% to 74% of their total faculty contact hours. The reader will recall that it was assumed in the theoretical construction that the full-time faculty members in TRU #1 would provide 25% of the time required in clinical instruction and that the part-time faculty members would provide the other 75% of the time. One of the important questions to be raised for those faculty members who spend more than the average time in clinical instruction is whether or not the time is well spent versus other activities in which they need to be involved. A related question is whether more of this clinical instruction should be done by part-time faculty members?

For those faculty members who spend a relatively small amount of time in clinical practice it must be asked whether they are keeping current their clinical skills? Certainly if they are not, the question must be asked whether students enrolled in academic programs are receiving the kind of instruction, especially clinically related theory that might be desired.

Reviewing data such as this may help some faculty members perceive the possible change that is needed in their distribution of activity and those which occur within their curriculum.

Faculty Contact Hours for the Primary Department (TRU #1)

Data for the faculty contact hours for each of the primary departments is listed in Table 18. In this Table requirements are expressed as a percentage of faculty contact hours for the part-time faculty as well as the full-time faculty. Also identified is the percentage of the total faculty contact hours for the program delivered by the primary department. The total number of faculty contact hours ranges from a high of 9903 in Medical Technology, to a low of 1702 in Medical Record Administration.

One of the most striking phenomena seen in this Table is the extremely high use of part-time faculty members by many of the divisions. These part-time faculty members are responsible for delivering more than 50% of the total faculty contact hours provided by the division in Circulation Technology, Medical Communications, Medical Record Administration, Medical Technology, Occupational Therapy and Physical Therapy. A considerable question that must be raised in this regard is, "If part-time faculty members are responsible for delivering so many of the faculty contact hours which are produced by the division, are they sufficiently prepared to do so?" In other words, do these faculty members have appropriate time to prepare for the faculty contact hours which they are delivering? Are they given a sufficient amount of assistance by the full-time faculty in the division who fully understand what it is they are supposed to accomplish with the students in these areas? Reviewing these data provides an opportunity for the

Table 18

OSU:SAMP:Program Cost Analysis: Faculty Contact hours for Primary Department
Actual 1974-75

	Primary Department				
			Percent of FCH Requiring		
Program	Total Number FCH	Rank Order FCH	Full-Time Faculty	Part-Time Faculty	FCH Percent of Total Program Hours
1. Circulation Technology	5560	8	36	64	93
2. Medical Communications	2663	3	16	84	81
3. Medical Dietetics	5635	9	55	45	86
4. Medical Illustration	3169	4	96	4	89
5. Medical Record Administration	1702	1	30	70	33
6. Medical Technology	9903	10	22	78	90
7. Occupational Therapy	4168	6	19	81	11
8. Physical Therapy	2185	2	23	77	12
9. Radiologic Technology	4848	7	72	28	93
10. Respiratory Technology	3554	5	51	49	89
Average	4339				

consideration of the extreme importance of carefully coordinated relationships of the part-time faculty with the full-time faculty. The need for having clearly defined objectives for each of the components of instruction can readily be concluded.

Seven of the programs are responsible for delivering more than 81% of the total faculty contact hours of their program. Two questions arise which have been discussed in several of the individual programs. The first is, "Are all of the faculty contact hours necessary?" The second, "Is it academically sound to have students receiving so much of the faculty contact from their own profession versus the basic medical sciences faculty, other allied health professionals or faculty members in the general university?" Again these questions and data are "food for thought" for faculty members and administrators who are responsible for the various allied health curricula.

Since most of these programs are "two plus two" programs, they tend to be "professional faculty intensive" in the last two years. Not all of the course work taken by students in the Junior and Senior year, however, is delivered by faculty in the division. Thus, whether these two years must be professional faculty intensive, is problematic. In programs where it does exist, it is questionable whether or not faculty members can ever hope to participate in the broad range of activities expected of them as related to tenure and promotion, unless funds are made available to add more faculty members. If faculty continue to design curricula that require such a large percentage of allied health professional instruction, the utilization of new modes of instruction need to be explored. Answers to the preceding questions do not come easily. Much time and effort is necessary to re-evaluate such matters. The faculty must be assisted in carefully reviewing the ramifications of curriculum design as related to their ability to meet all demands placed on them.

Faculty Contact Hours for the Total Program

Some of the points raised previously are even more evidenced when viewing the data arranged in Table 19, faculty contact hours for the total program expressed as a percentage for each of the Teaching Responsibility Units. It is obvious that all of the programs except Occupational Therapy, Physical Therapy and Medical Record Administration control the major portion of the faculty contact hours in the primary division. In these three cases the major portion of the faculty contact hours occur in the terminal clinical affiliation, TRU #4. Can a program continue to have a high discipline orientation and have significantly more input from other faculty members? This input could come from the School of Allied Medical Professions via the medium of common courses or other instructional arrangements with the basic medical science faculty and the faculty of the university? This input could add broader perspectives to the curriculum, not to mention to economies that could be realized.

There is no question that there are many economies of scale that may need to be utilized as resources become scarce. The relationship between appropriate utilization of resources and the "professionalism" of a curriculum may need to be reassessed in the future.

Table 19

OSU:SAMP:Program Cost Analysis: Faculty Contact Hours for Total Program
Actual 1974-75

Program	Total Number FCH	Rank Order FCH	Percent of FCH in					
			Primary Unit Responsibility					
			TRU #1	TRU #4	Total	TRU #2	TRU #3	TRU #6
1. Circulation Technology	5937	6	93	-	93	-	1	6
2. Medical Communications	3270	1	81	-	81	3	2	14
3. Medical Dietetics	6568	7	86	-	86	0	4	10
4. Medical Illustration	3540	2	89	-	89	0	3	8
5. Medical Record Administration	5108	4	33	57	90	2	2	6
6. Medical Technology	10,984	8	90	-	90	-	2	8
7. Occupational Therapy	38,848	10	11	82	93	1	2	4
8. Physical Therapy	18,623	9	12	72	84	1	5	10
9. Radiologic technology	5196	5	93	-	93	0	1	6
10. Respiratory Technology	3994	3	89	-	89	-	3	8
Average	10,207							

Faculty Availability for Direct Contact by Full-time Faculty in Primary Department

Faculty availability for direct contact is determined by dividing the faculty contact hours to be taught by the number of faculty hours available to teach. The faculty hours are determined by multiplying the number of faculty by the number of hours for all faculty activities. The resulting factor is the percentage of total time available for direct contact (see Table 20).

The range of availability for the Ten Cost Study programs in the "actual" analysis is from 7.5% for Medical Communications to 31.3% for Respiratory Technology based on a standard total available time of 1920 hours (40 hours per week for 48 weeks).

Assuming that the primary responsibility of the faculty members is to provide the direct contact teaching which the curriculum demands, the major question which arises is, "What is the appropriate amount of direct contact teaching in relation to the other faculty activities of preparation, research, patient care, administration, professional development and public service?" Is 7.5% too little? Is 31.3% too much?

Faculty activities and their relationship as they are perceived in actuality and ideally by the Ohio State University, School of Allied Medical Professions faculty are reviewed in Appendix E. The perceptions of division directors and administrators of faculty activity distribution are also included.

Table 20

OSU:SAMP:Cost Study: Program Cost Analysis: Faculty Availability for Direct Contact TRU #1 Full-Time Faculty
Actual 1974-75

Program	Faculty Contact Hours to be Taught (FCH)	Faculty Available to Teach (FA)	Faculty Availability Factor FCH/(FAx 1920)
1. Circulation Technology	1974	4	25.7
2. Medical Communications	430	3	7.5
3. Medical Dietetics	3076	11	14.6
4. Medical Illustration	3055	7	22.7
5. Medical Record Administration	507	2	13.2
6. Medical Technology	2218	5	23.1
7. Occupational Therapy	801	5	8.3
8. Physical Therapy	1689	5	17.6
9. Radiologic Technology	1336	3	23.2
10. Respiratory Technology	1800	3	31.3

In all of the divisions except Medical Illustration, Medical Record Administration and Respiratory Technology, the faculty perceived that they spent more time in direct contact teaching than is calculated from data in the "actual" analysis of the didactic questionnaire.

For any planning purposes it would be very important for the faculty to review their own perceptions, those of their director and their administrative group as to what they believe their direct contact teaching responsibilities are and ought to be.

This is a crucial element in the program cost analysis because it is the faculty's availability to supply direct contact teaching which must be matched to the students curriculum demand for direct contact teaching.

Faculty Requirements for Primary Department Type and Total Program

Faculty requirements on an FTE basis are displayed in Table 21 for each of the 10 programs. The range is from 11 full-time faculty members in the Medical Dietetics Division to two in Medical Record Administration. The program total for each of these, is 15.2 and 5.2 respectively. Respiratory Technology has the least full-time equivalents for the total program (4.9 FTE's).

One of the most interesting observations that may be made from this Table is related to the total number of FTE's for the ten programs in the study. This total represented 114.3 FTE's. When the number of FTE's was calculated using an assumption full-time faculty only the number required was 225.2, a difference of 110.9 FTE's. Thus it can be seen very easily the cost effectiveness of using part-time faculty members.

The issue which needs to be carefully explored is whether or what the appropriate use of part-time faculty members is and how this impinges on the quality of the program. In all probability programs taught totally by part-time faculty members would soon be reduced in quality, because the faculty are not involved in research and clinical practice. It is obvious, however, that having all of the programs delivered by full-time faculty members would be exceedingly costly.

Another observation may be made reviewing the data in Table 21 is that additional part-time faculty members and additional graduate assistants might assume some of the faculty contact hours currently being provided by the full-time faculty members and that this change

Table 21

OSU:SAMP:Cost Study: Program Cost Analysis: Faculty Requirements for Primary Department Types and Total Program
Actual 1974-75

	Primary Department					Faculty Requirements (FTE)					
Program	Full-Time	Part-Time	Graduate Assistant	Clinical Associates	Guest Lectures	TRU #1 Total	TRU # 2	TRU # 3	TRU # 4	TRU # 6	Program Total
1. Circulation Technology	4	-	-	1.8	0	5.8	-	.1	-	.8	6.7
2. Medical Communications	3	-	-	1.1	.1	4.2	.2	.1	-	1.1	5.6
3. Medical Dietetics	11	-	1.0	1.0	.1	13.1	0	.6	-	1.5	15.2
4. Medical Illustration	7	-	-	-	.1	7.1	0	.2	-	.6	7.9
5. Medical Record Administration	2	-	-	.6	0	2.6	.2	.2	1.5	.7	5.2
6. Medical Technology	5	.6	0	2.9	.7	9.2	-	.5	-	2.0	11.7
7. Occupational Therapy	5	1.0	1.0	1.5	.1	8.6	.8	1.5	16.7	3.6	31.2
8. Physical Therapy	5	1.0	.1	0	.1	6.2	.6	2.2	6.9	4.4	20.3
9. Radiologic Technology	3	-	-	1.8	0	4.8	0	.1	-	.7	5.6
10. Respiratory Technology	3	-	-	.9	0	3.9	-	.3	-	.7	4.9
TOTAL	48	2.6	2.1	11.6	1.2	65.5	1.8	5.8	25.1	16.1	114.3
Faculty Requirement All Full Time Assumption	48	9.4	7.6	41.8	4.3	111.1	1.8	5.8	90.4	16.1	225.2

would not only reduce the cost of the program but increase the amount of time available for the full-time faculty members to participate in other activities such as research and public service.

The full implications of re-ordering the utilization of part-time faculty, graduate assistants, and full-time faculty members should be carefully undertaken before changes are made. The expertise necessary from any of these faculty members must be carefully considered in view of the content which they would deliver and the quality of the program desired.

It can be seen in viewing Table 22 that the ratio of the average student number per faculty member ratio is relatively low, in all cases less than 1 to 15. The average is 1-8.

When the percentages of the faculty requirements provided by each Teaching Responisibility Unit are reviewed, the Primary Department has the largest amount. In all cases the TRU #1 full-time faculty requirement represents the highest proportion as compared with part-time faculty. However, it should be noted, that in Medical Record Administration, Occupational Therapy, and Physical Therapy the faculty requirements provided in the terminal clinical affiliation (TRU #4) are quite high. In the case of Medical Record Administration it is higher than the percentage required on the part of part-time faculty. In the case of Occupational Therapy and Physical Therapy it is higher than the total for both part-time and full-time faculty members in TRU #1.

Table 22

OSU:SAMP:Program Cost Analysis: Total Program Faculty Requirements
Actual 1974-75

Program	Average Student Number per Faculty	Rank Order	Percent of Faculty Requirements Provided by: TRU #1 Full-Time	TRU #1 Part-Time	TRU #1 Total	TRU #2	TRU #3	TRU #4	TRU #6
1. Circulation Technology	7	3	60	27	87	-	1	-	12
2. Medical Communications	11	9	54	21	75	4	2	-	19
3. Medical Dietetics	7	3	72	14	86	0	4	-	10
4. Medical Illustration	2	1	90	0	90	0	2	-	8
5. Medical Record Administration	10	8	38	12	50	4	4	29	13
6. Medical Technology	9	6	42	36	78	-	4	-	18
7. Occupational Therapy	6	2	16	12	28	2	5	53	12
8. Physical Therapy	15	10	25	6	31	3	11	34	21
9. Radiologic Technology	9	6	54	32	86	0	2	-	12
10. Respiratory Technology	8	5	61	19	80	-	6	-	14
Average	8								

Average Faculty Salaries

Displayed in Table 23 are the average salaries for the various Teaching Responsibility Units. They are listed by program. For specific information regarding the source of these data, the reader may wish to refer to Appendix I, Step 8.

There is some difference that may be noted between high ($15,968) and low ($11,834) averages for the programs. In general the average salaries for the full-time faculty members in the primary department of the ten programs which were studied (TRU #1), are lower than those of the entire school (TRU #2) and the Health Center (TRU #3). The average for the general University (TRU #6) was $17,925 for nine months. When converted to an eleven month basis, this is equal to $21,908. Thus the average for TRU #1, which is an eleven month figure, is significantly lower.

In general the level of salaries of the faculty as shown was not as significant in determining the ultimate cost of the student's program as was the amount of faculty time that was necessary to teach the curricula as they were designed.

Table 23

OSU:SAMP: Cost Study: Faculty Salaries: Average
Actual 1974-75

Program	TRU #1 Full-Time Faculty	Part-Time Faculty	Graduate Assistant	Guest Lecturers	Clinical Faculty	TRU #2 SAMP	TRU #3 Health Center	TRU #4 Clinical Off Site	TRU #6 General University
1. Circulation Technology	15,568	-	-	-	13,328	-	21,276	-	17,925
2. Medical Communications	15,968	-	-	15,968	11,500	16,544	21,276	-	17,925
3. Medical Dietetics	14,818	9,360	-	14,000	10,000	16,544	21,276	-	17,925
4. Medical Illustration	11,834	-	-	23,336	-	-	21,276	-	17,925
4. Medical Record Administration	13,368	-	-	-	14,000	16,544	21,276	14,000	17,925
6. Medical Technology	12,912	11,665	-	12,912	9,422	-	21,276	-	17,925
7. Occupational Therapy	15,120	12,318	10,800	14,120	14,000	16,544	21,276	14,000	17,925
8. Physical Therapy	15,432	11,952	9,360	15,432	-	16,544	21,276	14,444	17,925
9. Radiologic Technology	15,568	-	-	-	9,110	-	21,276	-	17,925
10. Respiratory Technology	14,448	-	-	-	9,500	-	21,276	-	17,925

Total Actual 1974-75 Cost

Shown in Table 24 are the relationships of Faculty cost to Other cost factors. The "Other cost factor" shown is for the total program, rather than for any of the specific Teaching Responsibility Units. In general the Other cost of offering a program exceeds the Faculty cost. These Other cost factors have relevance as a "rule-of-thumb" in estimating the total cost, if faculty cost is known and actual values for Other cost are unknown. This generalization may be used in roughly estimating the total cost of sections of a total program as well as the entire program.

Several factors impinge on the size of the Other cost factor. In the Medical Technology program, extensive use of part-time faculty reduces the total Faculty cost. The expensive nature of reagents, etc., utilized in the program leads to a proportionately high Other cost (1.9). Excessive use of part-time faculty can lead to an interesting effect on the Other Cost factor. Even though Occupational Therapy makes use of part-time faculty (mostly in TRU #4), the extremely high amount of faculty time mitigates, to some extent, the cost effectiveness of part-time efficiencies. The extensive use of full-time faculty by Medical Dietetics leads to a higher faculty cost than would result with use of fewer full-time and more part-time faculty. The current curriculum leads to an Other cost factor of 1.0.

While no value of the Other cost factor is suggested as "ideal", the relationship of faculty cost to Other cost is a striking one and may not have been a part of most curriculum planners common knowledge.

OSU:SAMP: Cost Study: Total Costs
Actual 1974-75

	Program	Program Total Cost $	Percentage in Faculty Cost	Percentage in Other Cost	Other Cost Factor
1.	Circulation Technology	220,340	47	53	1.1
2.	Medical Communications	191,559	46	54	1.2
3.	Medical Dietetics	439,009	51	49	1.0
4.	Medical Illustration	171,552	58	42	.7
5.	Medical Record Administration	201,379	38	62	1.6
6.	Medical Technology	444,458	35	65	1.9
7.	Occupational Therapy	1,120,146	41	59	1.4
8.	Physical Therapy	822,931	40	60	1.5
9.	Radiologic Technology	184,542	42	58	1.4
10.	Respiratory Technology	162,130	44	56	1.3
	Average		44	56	1.3

Average Cost per Student per Year

Displayed in Table 25 is the average cost per student per year expressed as a percentage for each of the Teaching Responsibility Units cost. As noted earlier the highest average cost per student per year is in Medical Illustration and the lowest in Physical Therapy. One can see that with only the one exception, Occupational Therapy, the major percentage of the cost resides in the primary department. In the case of Occupational Therapy 50% of the cost resides in the faculty members who provide the terminal clinical affiliation for the students. Full-time faculty members in all programs with the exception of Occupational Therapy represent the largest single percentage of the total cost. This is not surprising in view of the earlier observation regarding the large number of faculty contact hours provided by full-time faculty members in the 10 programs.

The overall average cost per student per year of $4,093 has been adjusted for the number of students enrolled. It should be pointed out that the cost of programs are likely to be different by program and also differ in various educational environments. It would be major error for anyone to assume that the average cost for allied health programs regardless of where they occur should be $4,093. This figure and those for the various programs do represent at least an indication of approximately what programs like this might cost in settings similar to Ohio State, with curricula organized as those that are presented.

Table 25

OSU:SAMP:Program Cost Analysis: Average Cost per Student per Year
Actual 1974-75

Program	Average Total Cost per Student per Year	Rank Order	PERCENT OF COST FOR						
			TRU #1			TRU #2	TRU #3	TRU #4	TRU #6
			Full-Time	Part-Time	Total				
	$								
1. Circulation Technology	5007	8	58	26	84	-	2	-	14
2. Medical Communications	3141	2	54	18	72	4	3	-	21
3. Medical Dietetics	4433	7	74	6	80	0	7	-	13
4. Medical Illustration	9029	10	78	3	81	0	6	-	13
5. Medical Record Administration	3948	4	43	10	53	4	5	25	13
6. Medical Technology	4078	6	57	20	77	-	6	-	17
7. Occupational Therapy	5775	9	23	5	28	3	7	50	12
8. Physical Therapy	2741	1	34	0	34	3	14	29	20
9. Radiologic Technology	3766	3	62	21	83	0	3	-	4
10. Respiratory Technology	3954	5	62	13	75	-	9	-	16
Average	4093								

It is important for any institution that intends to offer allied health programs to consider the cost factor as it relates to income from students, i.e., tuition, and other sources of income such as state support. An appropriate supporting mechanism must be developed if these programs are not to be requiring supplements from other programs in order to be offered in any given educational arrangement.

When reviewing the distribution of total cost by year (Table 26) it can again be seen that the major costs of these programs reside in the third and fourth years. Essentially, this is the professional component of the program where generally lower student-faculty ratios prevail, and where high amounts of faculty contact hours by the allied health professionals is found.

Some of the interesting interrelationships between student contact hours, faculty contact hours, and cost per students, may be seen by review of Table 27. In general, a "rule-of-thumb" can be applied. The higher the percentage of student contact hours and of faculty contact hours are for any year in the program, the higher the cost per student will be. For example in Medical Dietetics, 24% of the total student contact hours reside in the Junior year, 17% of the faculty contact hours, and 16% of the cost, while in the Senior year student contact hours represent 40% of the total, faculty contact hours are 71% of the total and 67% of the cost reside in the Senior year.

One of the striking observations that may be made in viewing the data displayed in Table 27, is the effect of utilizing part-time faculty members on the cost of academic programs. For example, in the case of Circulation Technology, it is obvious that lower percentages of

Table 26

OSU:SAMP:Program Cost Analysis: Actual Yearly Cost per Student related to Total Program Cost

Program	Total Program Cost $	Rank Order	Percent of Total Cost in Year 1	Year 2	Year 3	Year 4
1. Circulation Technology	20,032	8	7	5	32	56
2. Medical Communications	12,562	2	11	6	15	68
3. Medical Dietetics	17,734	7	8	9	16	67
4. Medical Illustration	36,116	10	5	7	50	38
5. Medical Record Administration	15,795	4	7	9	10	74
6. Medical Technology	16,311	6	8	6	18	68
7. Occupational Therapy	23,096	9	8	25	28	39
8. Physical Therapy	10,973	1	11	12	24	53
9. Radiologic Technology	15,065	3	8	8	47	37
10. Respiratory Technology	15,816	5	8	11	29	52
Average	16,372					

OSU:SAMP:Program Cost Analysis: Actual Yearly Student Contact Hours (SCH), Faculty Contact Hours (FCH) and Cost per Student (C/S) Comparisons
Actual 1974-75

Program	Program Total		Percent of Total Per Year			
			1	2	3	4
1. Circulation Technology	3250	SCH	20	17	36	37
	5937	FCH	3	2	32	63
	20,032	C/S	7	5	32	56
2. Medical Communications	2285	SCH	25	22	24	29
	3270	FCH	7	4	12	77
	12,562	C/S	11	6	15	68
3. Medical Dietetics	3277	SCH	18	18	24	40
	6568	FCH	6	6	17	71
	17,734	C/S	8	9	16	67
4. Medical Illustration	3640	SCH	22	26	26	26
	3540	FCH	3	4	52	41
	36,116	C/S	5	7	50	38
5. Medical Record Administration	2597	SCH	22	22	22	34
	5108	FCH	3	4	5	88
	15,795	C/S	7	9	10	74
6. Medical Technology	3740	SCH	17	17	23	43
	10,984	FCH	4	3	15	78
	16,311	C/S	8	6	18	68
7. Occupational Therapy	4190	SCH	16	21	32	31
	38,848	FCH	2	9	31	58
	23,096	C/S	8	25	28	39
8. Physical Therapy	2800	SCH	21	21	24	34
	18,623	FCH	6	5	9	80
	10,973	C/S	11	12	24	53
9. Radiologic Technology	4204	SCH	14	14	41	31
	5196	FCH	3	3	52	42
	15,065	C/S	8	8	47	37
10. Respiratory Technology	3500	SCH	19	19	31	31
	3994	FCH	4	4	32	60
	15,816	C/S	8	11	29	52

the cost resides in the first and second year of the program. Additionally lower percentages of the total contact hours of the program reside in the first two years.

Viewing the totality of any program to attempt to decide what the appropriate mix of full-time and part-time faculty is essential if the maximum benefit and minimum cost is to be achieved. Questioning whether this mix is the same for each of the 10 programs or different for each of the programs is also appropriate. Considering that each of the programs has different numbers of students enrolled, different numbers of full-time faculty members, different curricular arrangements; it may be concluded that the mix is not standard, but needs to be considered program by program, if it is to be optimized.

IV. Summary of Conclusions and Future Plans

A. Conclusions of the Cost Study

1. Original Goals and Objectives

With pressures on institutions to prepare qualified allied health personnel in numbers sufficient to meet current and future needs, the effect of rising costs in colleges and universities are being felt by those who offer such educational programs. Hospitals, health agencies, and schools of allied health are experiencing escalating costs in a milieu where the health care facilities educational functions, costly in themselves, are competing with the primary functions of such facilities, namely patient care but also preventive medicine, educational research and medical education. In other educational arenas, e.g., community colleges, allied health programs compete with other technically oriented programs for scarce resources.

In general no major studies have been completed regarding the comprehensive costs of educating allied health professionals. Therefore, in this environment the original objectives for the study were established. They were as follows: (1) establish the personnel costs associated with educating students in the didactic and clinical phases of the baccalaureate program in Circulation Technology, Medical Communications, Medical Dietetics, Medical Illustration, Medical Record Administration, Medical Technology, Occupational Therapy, Physical Therapy, Radiologic Technology and Respiratory Technology, (2) establish the costs for each course within each discrete program, (3) integrate costs for personnel with data established for operating costs and other cost factors in order to derive total program cost and (4) publish information obtained from the study in order that schools of allied health could evaluate their own programs in terms of cost in order to provide a basis for establishing the costs of changes or improvements in curriculum and faculty utilization; and to assist new and/or future schools of allied health to determine total cost prior to the establishment of programs in the allied health disciplines.

In order to carry out a portion of the fourth objective it was soon apparent that a methodology would need to be developed that was compatible with planning techniques. Additionally, it was determined that it was most desirable to determine total program costs in such a manner that specific information about any of the components could be determined. For example, a cost could be assigned to a specific course if necessary or more extensively costs could be assigned to a phase of the curriculum, such as the clinical educational experience.

2. Cost Per Student

As indicated earlier, allied health educational programs exist in contrasting environments. Complex curriculum designs are frequently utilized to educate students in these health professions. The methodology presented herein has allowed for the myriad of complexities and details to be sorted in order to ascertain the costs of educating students regardless of where the costs reside, i.e., in the didactic courses taught in any of the departments within the institution or in the clinical phases of education wherever it is conducted.

For each of the programs an "actual" and a "theoretical" average cost per student per year was determined. The results of these two analyses were as follows:

Program	Average Cost per Student per Year 1974-75 "Actual"	"Theoretical"
1. Circulation Technology	$5,007	$5,409
2. Medical Communications	$3,141	$4,161
3. Medical Dietetics	$4,433	$2,683
4. Medical Illustration	$9,029	$5,168
5. Medical Record Administration	$3,948	$3,432
6. Medical Technology	$4,078	$4,652
7. Occupational Therapy	$5,775	$3,215
8. Physical Therapy	$2,741	$1,545
9. Radiologic Technology	$3,766	$4,625
10. Respiratory Technology	$3,954	$4,376

3. Program Analysis

By reviewing the results of the analyses of the programs, several interesting observations may be made. In the cases of Medical Dietetics, Medical Record Administration, Medical Illustration, Occupational Therapy and Physical Therapy, it has been suggested that some economies could be effected which would lower the average cost per student per year of these programs. Further, it was suggested that any decisions in this regard should be the prerogative of the faculty in cooperation with the administrators. Utilizing this total program cost analysis methodology, a number of questions have been suggested. By applying the methodology, faculty members and administrators could review the curriculum to ascertain whether any of the economies that were suggested are practical and/or possible.

In other programs, e.g., Circulation Technology, Medical Communications, Medical Technology, Radiologic Technology and Respiratory Technology, results of the "theoretical" analysis would lead to an increase in the cost per student per year. These increases might possibly be offset by the additional quality that could be built into the academic program or alternately, by the additional time the faculty members might have to participate in a wider scope of activities which could include research, public service and professional improvement. Time for such activities is the direct result of the suggested changes which lead to the increased cost. It should be stressed that these decisions regarding costs and changes are the prerogative of the faculty in conjunction with the administration and would need to be reviewed carefully using a methodology such as suggested herein in conjunction with other objective and subjective factors which impinge upon decisions such as these.

It is important to review program by program the effect of the "theoretical" constructions which led to the cost differentials summarized above. There were essentially five factors related to the assumptions for the "theoretical" analysis which had a major impact on the average cost per student per year. These factors were (1) the student enrollment per class, (2) the faculty-student ratios, (3) the distribution of the primary department faculty's activities with regard to the percentage of faculty contact hours taught by full-time faculty in the various instructional modes, (4) faculty availability for direct contact and (5) the salaries of the full-time faculty members.

First, it may be helpful to review the effects of these changes with regard to the number of students enrolled in the program. The general effect is to change the efficiency of the resource utilization in the direction of maximizing it. Maximizing the efficiency of resource utilization also is the major effect of changing the faculty-student ratio. Changes with regard to the faculty organization, however, are more directly policy concerns rather than assumptions regarding efficiency. For example, with regard to the primary Teaching Responsibility Unit, it was assumed that full-time faculty members should teach 100% of the lecture and 100% of the laboratory plus 25% of the clinical time required in a program. This assumption increased or decreased the cost depending on the condition which was determined to exist in the "actual" analysis. Additionally it was determined that part-time faculty members should teach 75% of the clinical time as opposed to whatever proportion had been taught in the "actual" analysis. Again, depending on the program, this may have a positive or negative impact on the cost.

The faculty's availability for direct contact also is a policy decision. The question raised is how much should the faculty teach. The assumption which is being made in the constructed analysis is that full-time faculty members should be available 30% of their time for direct contact and that part-time faculty members should devote 75% of their time to the program for direct contact with the additional 25% of time given to the program free for preparation and other activities. Again, depending on the conditions occurring in the "actual" analysis this had the effect of increasing or decreasing the average cost per student per year.

The fifth and final effect of change that is related to the assumptions of the "theoretical" analysis was faculty salaries. This, too, is a matter of policy, but the assumption was "equal pay for equal work." It was assumed in the analysis that full-time and part-time faculty members full-time equivalents were "costed" at the same average salary level. Again, depending on the situation with the "actual" analysis, this had the effect of increasing or decreasing the total average cost per student per year.

Beginning with Circulation Technology, a comparison of the results of the "theoretical" analysis with those of the "actual" analysis can be instructive. In this program no major change would be recommended and it could be seen that the major cause of the slight increase in cost which resulted from the "theoretical" construction is related to the increased use of faculty. Full-time faculty members would be responsible for more total faculty contact hours in this curriculum, even though these contact hours are distributed differently with regard to the modes of instruction. This is related to the redistribution effect associated with reorganizing the faculty's efforts. It should be remembered that the lecture sections in the program for the "theoretical" construction were changed from 1-6 to 1-12 faculty-student ratios.

For the Medical Communications program the "theoretical" analysis would lead to a significant increase in the average cost per student per year. The increase is a result of a major redistribution of the faculty's activities providing for more instruction by the full-time faculty in the curriculum. Thus, there is a major increase in the number of faculty contact hours required of the full-time faculty members in this program. This increase occurs even with the change in the faculty-student ratios from 1-9 to 1-16 in the lecture sections taught by the program's faculty.

For the Medical Dietetics division the "theoretical" construction led to the suggestion that a significant decrease in the average cost per student per year could be achieved by making several changes. The major decrease in cost is related to the redistribution of the faculty's activities and more effective utilization of faculty in this program as it relates to instruction. With only slight changes in enrollment, but with major changes in the faculty-student ratios, especially for the lecture mode, these cost decreases probably could be achieved.

Of the ten programs analyzed the average cost per student per year was highest for the Medical Illustration program. The "theoretical" construction leads to the conclusion that the cost would be significantly decreased by shifting the enrollment slightly and making a major change in the manner in which lecture material is presented by the full-time faculty. According to the "theoretical" construction, lectures would be given to groups of 6 students rather than 1 on 1 which had been the practice as ascertained by data from the "actual" analysis. The "theoretical" analysis makes slightly less efficient use of fewer faculty members; nonetheless, the average cost per student per year is reduced.

Student enrollment per class in the Medical Record Administration program is increased slightly. There is only a slight change in the faculty-student ratios in lecture and laboratory sections and only slight changes in the student contact hours so that the faculty organization did not change significantly. There was a small increase in the faculty availability, however, and no single factor appeared to contribute most to the slight decrease in the average cost per student per year.

The "theoretical" construction for the Medical Technology program led to a slight increase in the average cost per student per year. This appeared to result mainly from the redistribution of the faculty's activities which increased the utilization of the full-time faculty members in teaching more of the laboratory experiences for the students. This increase in cost occurred with a slight change in the faculty-student ratios in lecture and laboratory sections and a slight decrease in student enrollment per class.

A striking decrease in the average cost per student per year was noted as a result of the "theoretical" construction for the Occupational Therapy program. With only slight increases in the enrollment of students and a moderate shift in the faculty-student ratios, the increase in cost appeared to result mainly from the redistribution of the faculty's activity and the availability of faculty for direct contact. Full-time faculty would have more responsibility for the laboratory and clinical experiences of the students and would need to be available more of their time for direct contact.

Even with a decrease in the student enrollment per class in the Physical Therapy program the average cost per student per year in the "theoretical" construction was decreased. This mainly was a result of changing the faculty-student ratios in lecture sections and also assuming a greater faculty availability for direct contact. The redistribution increases utilization of faculty in a more effective pattern. The cost reduction would result mainly from the change in the faculty-student ratio proposed for the clinical experiences, which goes from 1-1 to 1-3.

For the Radiologic Technology program the "theoretical" analysis produced a slight increase in the average cost per student per year. This additional cost resulted from the increase in the cost of faculty when the activities of the full-time faculty were redistributed somewhat to provide more direct contact. Faculty availability for this group also increased slightly. This addition in cost resulted even with a small change in the faculty-student ratio in lecture sections and only a very moderate increase in the total faculty requirements for the program.

The result of the "theoretical" construction for the Respiratory Technology program led to an increase in the average cost per student per year. There is only a slight increase in the student enrollment. A very small change in the faculty-student ratios for lecture sections was made with a moderate redistribution of the faculty's activities making reasonable utilization of their time for instruction. Availability for direct contact for the division's faculty was decreased, but the redistribution produced a need for additions to the full-time equivalents of the faculty. The salary associated with this slight increase led to the small cost increase.

For all ten of the programs analyzed, significant economies could be achieved by greater utilization of common courses, more utilization of basic medical sciences, and, where possible, more courses offered by the general university because of the utilization of larger class sizes. Economies also could be achieved by lecturing to larger group sizes and increasing the group size in both the clinical and laboratory experiences to their maximum levels at all times in the allied health programs. Economies can be achieved by admitting students one time each year and offering courses only once rather than more than one time per year. Also, careful consideration should be given to the number of contact hours which students are required to complete in their academic programs. Again, this is an issue that the faculty and administration should address together. Extremely careful thought should be given to the time that is necessary for students to assimilate the information and professional experience which is being provided. Time for other activities is important if one considers the "total" development of the student as a result of his presence and participation in the academic environment.

4. Element Analysis

In reviewing the elements from program to program, several questions and concerns are raised. It becomes obvious, for example, that the student contact hours, student enrollment and faculty-student group size are essentially "demand"-related factors, while elements such as faculty contact hours, faculty-student ratios, faculty availability and faculty requirements are "supply"-related factors.

In beginning to look at the element, student contact hours, the question might be asked, "What should students expect from a total curriculum?" In reviewing a total curriculum, it is most important to consider how many student contact hours is a reasonable load for a student in order to allow the student to have a full experience while involved in an academic institution in a student capacity. What time should be available for other life experiences to enrich the experience which he brings to the classroom, and which he will ultimately take to the practice of his allied health profession? On the other hand, how many student contact hours are really necessary in order to provide a quality program? What should be the distribution of the student contact hours? That is, what mode should be utilized, to what extent and how effective are the various modes in providing the educational experience that is necessary for the student?

Another key question that could be raised as a result of the analysis of the student contact hours is, "What percentage of the curriculum should be taught by whom?" There are several key issues that relate to this concern. How many hours must a student be in contact with faculty from the primary department in order to develop the necessary familiarity with the discipline? Conversely, how much should the student be in contact with faculty members from the other health professions and/or the rest of the university in order to develop the broader perspective that also may be of major importance?

Regarding contact with faculty members in the rest of the university, the long term perspective of this contact may be especially important as the student moves on to added educational experiences in order to further develop his professional base or to change professional emphasis or professions.

It is helpful in reviewing student contact hours to consider what distribution of which teaching mode is most effective to communicate the necessary information in an effort to provide the appropriate training, all at a reasonable cost. How many student contact hours are actually needed in order to provide a quality program? Another major question with regard to economy is how many student contact hours should be offered versus how many are required in the program. What is a reasonable variety of courses to provide for students? How much of a variety can an institution afford?

It can be seen from reviewing the foregoing questions and concerns raised by an overview of the element student contact hours, that important questions like these can really only be addressed after a careful and comprehensive analysis of what is occurring in a curriculum that is already operating. Certainly these are key concerns and questions which additionally should be posed about any curriculum that is being developed. It is evident that the element, student contact hours, is a key one to consider when using this methodology for planning purposes.

Another element of the analysis, student enrollment, can be reviewed in light of existing programs and for planning purposes if a new program were being considered. In thinking of the student enrollment, consideration should be given to the economies effected by the utilization of large classes. What class size can a given institution plan to accommodate? This must be considered both from the point of view of its resources and the perspective of the number of students which it can, in fact, enroll in the program. An answer to a question like this should not be made in isolation. It is related to state, regional and national manpower needs. How many inefficient programs can a nation or a state afford? Would it not be better to review the cost of allied health educational programs and determine that, given the facilities, faculty and other resources, "X" institution should offer one program and "Y" another? Even this type of decision needs to be made with great care. Strengths probably accrue to a profession as a result of professionals receiving their educational experiences in a variety of settings.

A question which seems to be most important relative to the element, faculty-student group size, is relevant mainly to effectiveness of instruction in a specific mode. The key question that seems to present itself is, "What is the maximum group size that can be used in any given instructional mode and still maintain the quality of instruction?" Obviously the more students one has per faculty member in any instructional mode the less expensive the program becomes. Quality is the most important factor one must consider relative to decisions in this area. Accreditation requirements also may play an important role in making these determinations about an academic program.

Upon reviews of the "supply" related factors, it can be seen that the available faculty contact hours are not unlimited and are directly related to the student contact hours. Also it is interesting that many of the questions and concerns raised regarding student contact hours required are directly related to the faculty contact hour supply. For example, how many contact hours should be supplied in what mode by what Teaching Responsibility Unit, and by which type of faculty member? These decisions must be carefully made in order to insure quality in the program.

In this light it is important to note that a full-time faculty has multiple responsibilities. Direct contact with students is only one of them. In order to meet the full range of responsibilities, faculty availability for direct contact must be in balance with other responsibilities. The time spent in these other responsibilities hopefully add an important measure of quality to the instruction provided in the direct contact hours. In essence "demand" and "supply" of faculty direct contact hours must be in an appropriate balance.

How much participation the full-time faculty members should have in providing some of the clinical instruction for the students also is an important consideration. Keeping current with their own clinical skills is a necessity. There are many quality concerns associated with this point. What is the quality of the patient care that these faculty members would deliver? Is the quality of the instruction they deliver in the classroom increased by some participation in clinical instruction?

In reviewing faculty contact hours there are numerous questions which need to be raised regarding the distribution of activities for part-time faculty members. It also is obvious from the review of faculty contact hours that the use of part-time faculty members and "non-salaried" clinicians greatly effects the total cost of the program. What is the appropriate distribution and utilization of part-time faculty in order to insure the quality of the program and effective utilization of scarce resources? For which of the instructional modes should part-time faculty members have responsibility?

Consideration also has to be given to how many of the faculty contact hours in the students' total program should be controlled by the primary department. This can be one of the most important quality issues related to the program.

Again, it is suggested that it is extremely helpful to have the complete information on all aspects of a program so that it can be reviewed as a totality. This must be accomplished in such a way that the interrelated pieces are observed rather than reviewing the program a piece at a time and never being able to see it in its entirety.

In reviewing the element, faculty-student ratios, several questions which are related to quality and cost effectiveness may be proposed. Using the methodology described a conscious decision can be made with regard to what appear to be the minimum and maximum ratios which lead to the optimum quality and cost effectiveness in a given program offered by a given institution. This, of course, has major implications in beginning to apply the methodology for planning purposes. These planning activities may involve revising an existing program or planning for an entirely new one.

One of the most important elements in the analysis is faculty requirements. The key issue is, "What is the minimum number of faculty members that are necessary in order to provide a program of minimum acceptable quality?" Reversing this, the question becomes, "What is the minimum size of program required to support a minimum faculty primary teaching responsibility unit?" In this regard the maxim which seems important is that the "demand must equal or exceed the minimum supply." What is meant by this? It appears that there is an absolute minimum number of faculty necessary in order to provide a viable academic group in which stimulating professionally related intellectual interchanges may occur. This minimum number is probably three faculty members. In designing a new program it would be suggested that unless there is sufficient demand on the part of students for the program in order to justify at least three faculty members in the primary Teaching Responsibility Unit, the program should not be initiated.

Additionally,even if one anticipates the development of a new program it should be initiated with the full complement of three faculty members. This provides the opportunity for intellectual interchange regarding the discipline in hopefully an "academic" atmosphere. It also provides a reasonable amount of time for faculty members to be involved in the instructional process and participate in other activities. These activities are necessary if a faculty member is to be able to add quality to their instruction through the vehicle of being involved in clinical practice, research or other scholarly activities, committee work, participation in state, regional or national organizations and additional accoutrements of quality instruction. If this is considered to be of key importance, then it can be seen that the construction of a total program using this methodology and the ascertainment of the cost related factors can be extremely helpful, especially in making a decision of whether to develop and offer a program as in the case of new programs, or to phase up, down,or out a program as the various supply and demand factors change.

5. Methodology

The analytical methodology developed and applied in this cost study is based on faculty contact hours required and supplied. This is different than student contact hours or student credit hours as utilized by a number of other cost methodologies which previously have been developed for utilization in educational institutions. This methodology is a "pencil and paper" system which could be applied to almost any educational setting for "actual" analysis or "theoretical" constructions.

Once the appropriate data are collected and an "actual" analysis is completed, one can utilize the results, alter the assumptions and, by completing the calculations, estimate the cost based on the new assumptions. It is a methodology that does not have to be undertaken by an institutional researcher or other person prepared by extensive education in business administration, accounting or mathematics. It is one that can be performed by persons with very few skills in these areas who are willing to take the time to learn and understand it. The methodology flows logically step by step.

The attempt has been made by the authors to outline all of the assumptions which were used so that if there are disagreements with these assumptions, they could be changed and the results calculated. This flexibility provides the greatest single advantage to the methodology as it can be adapted for planning purposes. It would appear that the methodology is readily amenable to computerization which the authors consider the next step in the research development. This would enhance its value as a large scale informational analysis and planning system, since it would reduce the amount of time necessary for the mechanical manipulation of large volumes of data and formulae. Therefore, its usefulness and cost effectiveness, particularly in the analysis of multiple program interactions, would be enhanced.

6. Review: Goals, Objectives and Results

The initial objective of establishing the personnel costs associated with educating students in the didactic and clinical phases of the ten baccalaureate programs was achieved. Not only were the average costs per student per year in the programs outlined, but the costs of educating the students in each of the four years of the various programs also were ascertained. While the goal of establishing the cost of each of the discrete programs was met, a change in the approach to the study did not produce in the final result the cost for each discrete course as was first contemplated. However, the cost of a discrete course may be calculated using the methodology which has been developed. As was noted, it became of interest to the investigators to establish the costs associated with total programs and produce an outcome of "total" cost by "program analysis" rather than aggregating the cost of individual courses and summing to produce the total.

Personnel costs and other costs were integrated to produce the total cost figures. The goal of establishing a methodology that would allow existing schools of allied health to evaluate their programs in terms of costs has been met. The methodology also allows for ascertaining the costs of changes in the curriculum and faculty utilization and would be of major assistance to new and/or future schools of allied health to determine the total cost prior to the establishment of programs in any of the various disciplines. Thus the original goals have been met. Also, extension of the study itself and additional information that was collected has allowed for increased dimensions and implications for the methodology which will be outlined and summarized in the next section.

B. Potential Uses of the Cost Analysis Methodology

There are potential uses both within institutions, within states, regions and for the nation which should be considered. Application and thought relative to this matter will help to establish the broader context in which the study not only was carried out but within which the range of application may lie.

1. Program - Institution

For any institution which uses program budgeting, the methodology would be of extreme value for a program director, department chairperson and/or a dean or director of a school. This methodology as noted earlier reviews the implications of the entire academic program in which students would be involved. Whether or not the institution has total budgetary responsibility, it is easy in the application of the methodology to consider, by appropriate arrangement of information and data, those portions with which the institution itself is mainly concerned. This would allow a person using the methodology to provide information to other departments in the secondary basic departments or areas of the general university, regarding the demand which the allied health program places on those departments. This could help support the budget being supplied by departments that are critical to the allied health program. In reviewing budgetary decision making, it is possible using the methodology to determine where the cost resides and what resources are necessary in order to carry out a given curriculum. Additionally, in planning a budget and considering the impact of cost as related to faculty salaries and/or other operating expenditures the process employed in this methodology allows for a new budget determination annually. This is based on the number of students enrolled and the resources that are necessary for a given program.

Many institutions are now moving toward zero based budgeting. This particular cost methodology could be considered a "zero based" system. Once the data is accumulated, it is easy to justify all of the aspects of the demands for the program and what is needed by way of resources to supply those demands. As conditions change it is easy to alter the various elements appropriately to produce a new budget which can be done annually or more often, if necessary.

One of the most important possible applications which this program cost methodology may have is for program planning. It would be impossible to estimate the number of programs that have been planned and implemented in higher education without any solid estimate of the costs involved and allied health is no exception. By developing the curriculum design prior to the time a program is implemented and determining the various demand factors, it is possible to estimate the cost involved with exceedingly good accuracy. The degree of accuracy depends only on the amount of detailed information one is willing to assemble.

Additionally, for existing individual courses or entire curricula, there are frequent changes which are necessary or desired. Sound decisions with regard to these changes can be made relative to the economic impact of the change by using the methodology. For example, if a change of the curriculum were desired, it would only be necessary to produce the new design. Then consideration could be given to the demand factors that are produced, the supply factors that are necessary to meet the demand and the cost elements related to the new curriculum design. Not only is it possible to estimate the total cost of the new design, but it also is possible to indicate who will bear which portions of the cost. The methodology allows for outlining in great detail the changes in demand that would be involved for other departments or sections of the university or the clinical facilities as a result of the new design.

2. State-Regional

In the foregoing section uses of the methodology were suggested mainly at the institutional level. Data and results presented in this report outline a specific application of the methodology at the institutional level. However, there is potential for utilization of the methodology on a state-wide or regional basis. Many states have systems of higher education that fund multiple programs. Within these states, separate institutions frequently offer a variety of allied health curricula. Even though the applications of the methodology are possible in all areas of higher education, focus in this section will be specifically on applications regarding allied health.

With increasing pressures to reduce the cost of higher education and allied health professions education particularly, state university systems or state systems of higher education may need to determine what institution will offer what programs. Utilizing this methodology it could easily be ascertained which institution offers the least expensive educational program in a specific discipline. However, it is hoped that more than just which program is least expensive might be addressed. A better question would be which institution offers the most cost effective program. Applying this methodology to programs offered at different institutions, one could ascertain not only what the cost per student per year for the programs are but also what portions of the programs at the various institutions have different cost rates.

Since it is possible to use this methodology and tell not only that programs cost different amounts at different institutions but also tell why, decision makers would be better able to decide which single or which separate institutions within a state should offer a specific program. That program also could be requested to modify its cost in certain ways. Again, on an institutional level, the methodology might be applied for planning purposes in efforts to make programs more cost effective.

It is hoped that the reader will keep in mind that there probably is no amount that any specific program should cost nor is any such figure suggested in this study.

As an example of the interface between a state system and an individual institution, one may wish to refer to the data in Table 26. In this case the yearly cost of educating students in Medical Dietetics is displayed with the total cost. One will note that this data is taken from Table 1. Calculating the percent of the total cost represented in each year it can be ascertained that the first through fourth years represent 8%, 9%, 16% and 67% of the total cost of $17,734

Table 28: MEDICAL DIETETICS: YEARLY COST ANALYSIS

Number of Students per Class 25

Program Total 99

	1	2	3	4	TOTAL
Total Cost per Student per Year	$1,378	$1,650	$2,918	$11,788	$17,734
Percent of Total Cost	8%	9%	16%	67%	100%
Tuition ($270 per quarter)	$810	$810	$810	$1,080	
Percent of Cost per Year	59%	49%	28%	9%	20%
State Appropriations	$1,261	$1,796	$1,796	$2,395	
Percent of Cost per Year	92%	109%	62%	20%	40%

for a student for the four year program. Using the tuition rate which students paid during the year of the cost study ($270 per academic quarter), one can ascertain the total tuition support for each of the years of the program. The extra quarter between the third and fourth year was arbitrarily assigned to the fourth year cost as was done in the original analysis. If one looks at the total tuition support for each year as a proportion of the cost of that year it can be seen that students in the Medical Dietetics program pay tuition that supports 59% of the total cost of the first year, 49% of the total cost of the second year, 28% of the total cost of the third year and 4% of the total cost for the fourth year. In all, the total tuition paid by the student represents 20% of the entire funds required to cover the cost of the program, i.e., $17,734 for the four year period.

Looking at the rate at which the institution was reimbursed by the state system for each of the four years of the program, it can be determined that the institution was reimbursed from year one through four respectively $1,261, $1,796, $1,796 and $2,395. These figures support 92% of the cost of the first year, 109% of the cost of the second year, 62% of the total cost of the third year and 20% of the total cost of the fourth year. The total reimbursement represents 40% of the total cost ($17,734) of the program.

It is obvious that an additional forty percent of the necessary funding source is not identified in the foregoing presentation of data. These additional funds are supplied from the state's oversubsidization of lower cost programs, from fees of students enrolled in lower cost programs and from other sources of funds provided to the University.

Considering this and the data for tuition and state appropriations, it is obvious that within the institution there must be the ability to distribute funds in a manner which allows for the compensation of the costs that are accrued in educating the students. This particular program, Medical Dietetics, was chosen for use in this example because nearly the entire educational program occurred within the single institution. Obviously,no decision should be made relative to the reimbursement for a single program without considering the context of other programs for which the institution is reimbursed from the state or without regard to other sources of income such as gifts, grants, and tuition which an institution receives. However, some of the planning implications for the methodology are clear from this simple display of data.

If the time arrives when planning on a regional basis is implemented the theoretical constructions for programs could be developed for a variety of institutions with the cost estimates attached and rational decisions made about which single or multiple institutions should offer the given program.

3. National

Looking at the national scope, programs in the given disciplines could be analyzed using the methodology and comparisons drawn between institutions with regard to what programs cost and why the costs are different in different institutions. Determination of cost components is easy. It also may be of interest when looking at a national scope to consider the possibility of analyzing the costs of the clinical component of a disciplines educational program on a national basis using a variety of clinical facilities. A very careful large scale study of this type might have a major impact on the future planning of individual disciplines as they review and reorganize the manner in which their students are to obtain the necessary clinical component of their education.

From the examples shown it is hoped that the reader might be able to see not only the specific application of the methodology which has been developed as it relates to specific programs within institutions, but it is also hoped that other applications are clear. These range from program budgeting and program planning at an institutional level, to budgeting and planning at state, regional and national levels.

If applied to multiple programs at any of the levels it may be used for a comparison of programs for identification of the differences in the cost of programs as well as why programs in fact have different costs.

C. Future Studies

As one might see by careful perusal of the appendices and the instruments which were developed for collecting data and for analyzing data which was already available, a large amount of data exists and is yet to be analyzed.

It also is hoped that the use of the methodology will be extended to disciplines other than allied health, for example, medicine, dentistry, chiropractic, osteopathy and nursing to mention but a few. The next key phase of future endeavors would be to computerize the methodology so that it could be even more amenable to wide use for planning purposes. Thus by changing assumptions one could easily generate the results and costs of the supply and demand factors.

The need for continuing studies in the area of cost effectiveness of educational programming is almost self-evident, since there are so many factors which continue to contribute to the escalating costs of educational programs. By way of example, the impact of inflation alone is shown in Table 29. Shown are the 1974-75 costs per student per year of the ten programs. The cost of each program also is indicated for the years 1975-76 and 1976-77. These values were obtained by using the inflation factors for the years noted. The increases in cost are significant. The authors believe that utilization of the methodology can assist in improving the management of resources available to provide educational programs. Additionally, they consider the methodology and its application "Research in Progress" which may be used by faculty, administrators, and researchers who will then share the results of their adaptations with others so all may learn together.

Utilization of this methodology can made a significant contribution to better educational programs and more cost effective utilization of the scarce human, fiscal, and physical resources available in our environment.

Table 29: Effects of Inflation on Ten Allied Health Education Programs

Program	Average Cost per Student per Year 1974-75 Actual	 1975-76 *Inflation 6.6%	 1976-77 *Inflation 6.4%
1. Circulation Technology	$5,007	$5,337	$5,679
2. Medical Communications	3,141	3,348	3,562
3. Medical Dietetics	4,433	4,726	5,028
4. Medical Illustration	9,029	9,625	10,241
5. Medical Record Administration	3,948	4,209	4,478
6. Medical Technology	4,078	4,347	4,625
7. Occupational Therapy	5,775	6,156	6,550
8. Physical Therapy	2,741	2,922	3,109
9. Radiologic Technology	3,766	4,007	4,263
10. Respiratory Technology	3,954	4,215	4,485
Average	4,093	4,363	4,642

*Inflation Factors are the Annual Percent Increase Over the Previous Fiscal Year of the Higher Education Price Index

Data Source: Halstead, D.C. Higher Education Price and Price Indexes
1977 Supplement, Washington, D.C. : Government Printing Office
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Health Professions Education:
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Glossary

1. Introduction
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3. Glossary
4. Major Sources of Definitions

Glossary Introduction

A technical report of this type applies theory from a variety of specialized fields which have unique vocabularies. Therefore, it becomes essential to define the terms used in the report in order to aid communication of the concepts to a multiple field audience.

Following is an index, pages GL2 - GL4, to the key terms used in this report structured on the program cost analysis procedure and the glossary of definitions by index code number which appear on GL5 through 13.

The terms on pages GL5 through 13 are defined in relationship to each other as shown on index pages GL2 through 4. It is suggested that the reader review both sets of pages prior to using the glossary in order to gain the most from its utilization. It is hoped that this arrangement will be of special assistance to the reader.

In the development of a planning system for higher education and, in particular, health professions education a larger scope of terminology is needed. A list of the major sources of definitions in this area is included for the reader's information.

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GLOSSARY OF TERMS:

Code
#

1. Program - an end-purpose goal or mission for an organizational unit such as Education.

2. Organization - a number of persons or groups having specific responsibilities and united for some purpose or work.

3. Organizational areas - major subdivisions of an organization identified in the health professions educational organization as Basic Sciences and Clinical Sciences.

4. Organizational unit - an academic department or other organizational subgroup that has fiscal, programmatic and administrative responsibility for a specific set of activities.

5. Educational unit - an organizational unit whose primary responsibilities are related to the activities of instruction, research and public service.

6. Department - a subdivision of a school maintained for the purpose of conducting a curriculum or curricula in a specified field of learning.

7. Primary department or division - an educational unit which has primary programmatic responsibility for a curriculum in a specified area of learning.

8. Secondary department or division - an educational unit which has support responsibility to supply faculty contact hours related to the curriculum of the primary department program.

9. Section - a subgroup of a department with a discrete professional identification such as a National Certification Board and a separate residency program.

10. Division - a subgroup having a generally accepted discrete research and/or clinical speciality base.

11. Specialty subgroup - a subdivision of a group having a generally accepted discrete and special base of knowledge.

12. Teaching responsibility unit (TRU) - a defined unit such as a division, department, group of departments or colleges which is responsible for teaching a discrete specialized portion of a program curriculum.

13. Curriculum - a particular course of study, often in a special field.

14. Calendar structure - the method by which the institution structures most of its courses for the calendar year.

15. Program length - the average amount of time measured in academic sessions necessary to complete a program.

16. Fiscal year - an institutionally defined consecutive twelve month period.

17. Academic year - a consecutive year of time that is institutionally designated as the academic year. An academic year may be equivalent to a fiscal year or may include only some of the sessions during which course work is offered. Most typically an academic year is equated to two semesters or three quarters.

18. Academic session - refers to any discrete time period in which course work is offered by the institution and for which students seek enrollment.

19. Semester - the semester calendar consists of two semesters during the typical academic year with about sixteen weeks for each semester of instruction. There may be an additional summer session.

20. Trimester - the trimester calendar is composed of three terms with about fifteen weeks for each term of instruction.

21. Quarter - the quarter calendar consists of three quarters with about twelve weeks for each quarter of instruction. There may be an additional summer session.

22. Curriculum structure - the method by which the institution structures the courses taught for a specialized program.

23. Preprofessional - refers to the liberal arts or the sciences portion of training related to the education of a professional.

24. Professional - refers to the advanced study in a specialized field related to the training of a professional.

25. Required curriculum - the course of study required for the completion of a program in a special field.

26. Fixed curriculum - that portion of a required curriculum which is standard for all students for the completion of a program.

27. Flexible curriculum - that portion of a required curriculum from which the student may select options in order to fulfil the requirements of the program.

28. Course - an organized set of activities pertaining to instruction in a particular subject matter, which is conducted during a given period of time (usually a quarter or semester) and for which credit toward graduation or certification is usually given.

29. Required course - a course specified as essential and non replaceable as a portion of the course of study required for the completion of a program.

30. Elective course - a course which may be chosen as a portion of the course of study required for the completion of a program.

31. Offered course - a course which is presented by the faculty which may be required of/or elected by students.

32. Credit - official certification that a student has successfully completed a course or study or - a unit of study so certified.

33. Credit hour - a unit of measure that represents the equivalent of one student engaged in an instructional activity for an academic session for which one credit is granted.

34. Group size (GS) - the number of students that can be in direct contact with a faculty member in any given instructional setting.

35. Faculty-student ratio (F-S) - the relationship between the number of faculty that are in direct contact with students, usually expressed as one faculty to a given number of students.

36. Mode of instruction, instruction type - the categorization of the methods by which organized instruction is conducted, reflecting educational technology and the use of the facilities, materials and equipment.

37. Predominate mode - the most common mode of instruction associated with a group size.

38. Didactic - communication for the purpose of instructing.

39. Clinical - communication of knowledge in a clinical setting.

40. Lecture - formal presentation of a prepared discourse. Primarily, one-way communication.

41. Recitation - Discussion - Conference - two-way communication of the contents of course materials.

42. Laboratory - instructor prepares and supervises the execution of investigations by the class.

43. Seminar - students carry the major preparation responsibility for the class for the purpose of communication of knowledge.

44. Supervised patient care - Clinic - patient care by a student under the supervision of a faculty for the purpose of instruction and training.

45. Supervised research - research by a student under the supervision of a faculty member.

46. Supervised teaching - teaching by a student under the supervision of a faculty member.

47. Tutorial - special supervision of learning of students individually or in small groups by a faculty member.

48. Product activity - an instructional activity which produces a product or outcome.

49. Single product activity - an instructional activity which produces a single product or outcome.

50. Joint product activity - an instructional activity which produces two or more products or outcomes.

51. Student contact hour (SCH) - an hour when a student is in contact with a faculty member for instruction or - a unit of measure that represents one hour of instruction given to one student in one week.

52. Scheduled SCH - an hour when a student is scheduled to be in contact with a faculty member.

53. Scheduled supervised SCH - a scheduled hour when a student is supervised by a faculty member.

54. General supervision SCH - a scheduled hour when the student is supervised by a faculty member who is generally available for contact.

55. Direct supervision SCH - a scheduled hour when the student is directly supervised by a faculty member who is directly available for contact.

56. Direct faculty contact SCH - a scheduled hour when a student is in direct contact with a faculty member.

57. Student - one who attends a school, college, or university to make a study of a specialized field of knowledge.

58. Student entering class size (S) - the number of students who enter the beginning of a program as a single group designated as a class.

59. Student enrollment (SN) - the number of students enrolled in a program, class or course.

60. Attrition - a gradual diminution in the number of students enrolled in a program, class or course.

61. Repetition - the number of students who must repeat the course of study.

62. Transfers - the students who move from one program to another of the same type.

63. Student headcount - a measure of the number of students based on actual persons present.

64. Student equivalents (SE) - a standardized measure of the student body. A health professions student equivalent is assumed to be enrolled for 960 student contact hours per year based on 30 hours per week and 32 weeks per year.

65. Student equivalent factor (SEF) - the value which allows student headcount numbers to be converted to student equivalence.

66. Faculty - any personnel having the majority of their activities (50% or more) in the instructional, research and/or public service activities of the institution's instruction, research and public service programs.

67. Faculty-student multiplier (FSM) - the value which allows student contact hours to be converted to faculty contact hours.

68. Direct contact factor (DC) - the value which indicates the percent of student contact hours that are in direct contact with a faculty member.

69. Faculty contact hours (FCH) - an hour when a faculty member is in direct contact with students for instruction or - a unit of measure that represents one hour of instructional staff time spent in contact with a section or course in one week.

70. Faculty type - a designation assigned to a faculty member based on their primary educational activities and specialty.

71. Basic Sciences faculty - a faculty member whose primary educational activities are in the Basic Sciences organizational area.

72. Clinical faculty - a faculty member whose primary educatonal activities are in the Clinical Sciences organizational area.

73. Calendar year - a faculty member whose employment follows the calendar or fiscal year system. Often designated as twelve or eleven months.

74. Academic Year, - a faculty member whose employment follows the academic year system, often designated as ten or nine months.

75. Full-time faculty - those persons who are expected to provide educational activities which include direct contact teaching, preparation for teaching, research, public service, administration and other activities or - those who are designated as "full-time" in an official contract, appointment or agreement.

76. Part-time faculty - those individuals who are expected to provide instructional related services only., i.e., direct contact and preparation or - those personnel who are designated as "part-time" in an official contract, appointment, or agreement.

77. Instructional faculty - a faculty member whose primary educational activities are instructional consisting of direct contact teaching and preparation for teaching.

78. Fully involved faculty - a faculty member who is involved in the full range of educational activities for their entire available time.

79. Geographic full-time - a faculty member who is involved in the full range of educational activities whose service activities are external to the educational unit.

80. Chairperson - a faculty member whose primary educational activity is administration of an organizational subgroup such as a department.

81. Program/Division director - a faculty member whose primary educational activity is the administration of a program or division.

82. Servicer/researcher - a faculty member whose primary educational activity is service or research.

83. Graduate teaching associate - a graduate student who participates in instructional activities under the supervision of a faculty member.

84. House officer - a medical graduate student who participates in instructional activities under the supervision of a faculty member.

85. Clinical preceptor - a faculty member whose primary activity is patient care who provides instructional supervision of students in a clinical setting.

86. Guest lecturer - any individual who provides instruction to a class on a one-time basis.

87. Volunteer - any individual who provides instruction to a class for which no direct renumeration is paid or - a person who performs or gives their services of their own free will.

88. Part-time equivalent - a unit of measure which equates the value of part-time head counts to a standard of full-time equivalence.

89. Faculty availability (FA) - the amount or percent of time a faculty member has available for educational activities in particular direct contact teaching.

90. Faculty activity analysis categories (FAA) - represents the principal abilities and/or skills required by a postsecondary education work assignment or - the activities that faculty members may perform in the context of their professional lives.

91. Direct contact teaching - teaching in which the faculty member is in direct contact with the student.

92. Preparation - time spent in activities related to preparation for teaching activities present or future.

93. Instruction - all activities directly related to teaching and the preparation for that teaching.

94. Research - all activities that involve the practice of a research, scholarship or creative work-related skill.

95. Public service - all activities that involve providing a service to a public group including patient care in any setting.

96. Patient care - activities related to the care of patients in any setting.

97. Administration - time spent in the administrative activities generally related to educational activities.

98. Professional development - time spent in keeping current in a professional field.

99. Professional improvement - time spent in obtaining advanced knowledge in a professional field.

100. Full-time equivalent (FTE) - a standardized measure to determine the faculty requirements on a full-time basis.

101. Faculty average salary (FS) - the average amount of money paid for the educational services provided by a faculty type during a fixed period of time or - the average salary excluding fringe benefits paid to faculty.

102. Costs - the measure in dollars of resources used in the process of achieving objectives during a given period of time or - the total monetary expenditure and/or value of goods and services regardless of by whom they are paid or contributed.

103. Faculty costs (FC) - the measure in dollars of the faculty resources used in the process of achieving the program objectives during a given period of time or - the total amount of faculty salaries from all sources.

104. Other cost factor (FP) - the value which relates the faculty costs as part of the total costs thereby identifying the other costs.

105. Other costs (OC) - the measure in dollars of all resourses other than faculty used in the process of achieving the program objectives during a given period of time.

106. Direct costs - those costs which are directly assignable to the program.

107. Indirect costs - those costs which are not directly assignable to a program that must be indirectly allocated.

108. Support staff costs - the costs related to the staff who directly support the faculty in the process of achieving the program objectives.

109. Supply, equipment, travel costs - the costs related to the supplies, equipment, travel and other services resources that are used to directly or indirectly support the faculty in the process of achieving the program objectives.

110. Space, maintenance, other costs - the costs related to the maintenance of the plant space and other miscellaneous resources that are used to directly or indirectly support the faculty in the process of achieving the program objectives.

111. Total costs (TC) - the measure in dollars of the total resources used in the process of achieving the program objectives during a given period of time, usually identified as operating costs.

112. Capital costs - the valuation placed upon the services provided by buildings and equipment used in the process of achieving the program objectives during a given period of time.

113. Full costs - the measure in dollars of direct, indirect and capital costs related to the resources used in the process of achieving the program objectives during a given period of time.

114. Cost per unit or Average Cost - the cost per unit obtained by dividing total costs by the total quantity produced.

115. Cost per student (C/S) - is the unit which measures a cost divided by the total quantity of students produced by the program.

116. Total program cost per student (TP) - the unit which measures the total program cost divided by the number of students in the program class.

117. Average cost per student per year (Y) - the unit which measures the total program cost per student divided by the total number of years of the program.

118. Yearly cost per student (YRA) - the unit which measures the cost to an individual student for a specific year of the program.

119. Analysis - the separation of an intellectual or substantial whole into constituents for individual study.

120. Program cost analysis - the separation of the costs related to a individual program.

121. Actual program cost analysis - the separation of the costs related to a program which exists in actuality.

122. Theoretical program cost analysis - the separation of the costs related to a program which exists in theory.

123. Construction - the act or process of constructing, creating by systematically arranging ideas or - to form by assembling parts, build, erect.

124. Program cost construction - the process of constructing the cost of a program based on the resources utilized in the process of achieving an objective.

125. Actual construction - the process of constructing the cost of a program based on actual data.

126. Theoretical construction - the process of constructing the cost of a program based on assumptions.

MAJOR SOURCES OF DEFINITIONS

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Association of American Medical Colleges (1972), *AAMC Faculty Profile Guide for Reporting Data* 1972-73, 1973-74. Washington, D.C.: AAMC.	AAMC
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Appendix A. Summary of Activities

COST ANALYSIS OF TEN ALLIED HEALTH PROGRAMS

Summary of Activities (Estimated Time Span by Months 1-12)
July 1, 1975 - June 30, 1976

I. SELECTION OF TEAM MEMBERS (Months 1-3)

- A. Full-time research assistant
- B. Part-time graduate research associate
- C. Part-time student research assistant
- D. Part-time student clerical assistant
- E. Part-time student clerical assistant
- F. Consultant

II. ORIENTATION OF TEAM MEMBERS (Months 1-3)

- A. Orientation to the study
  - 1. Objectives
  - 2. Methodology
- B. Orientation to the School of Allied Medical Professions
  - 1. History and objectives of ten divisions under study
  - 2. Key faculty members
  - 3. Key preceptors
- C. Responsibility of team members

III. PLANNING OF RESEARCH ACTIVITIES (Months 1-4)

- A. Development of timetables
- B. Allocation of grant resources
  - 1. Staff salaries
  - 2. Supplies
  - 3. Equipment

IV. REVIEW OF RELEVANT LITERATURE (Months 1-3)

- A. Comprehensive mechanized literature review
  - 1. Mechanized Information Center, OSU
  - 2. Medline, Health Sciences Library
- B. Collection and review of published and unpublished studies

V. SCHOOL OF ALLIED MEDICAL PROFESSIONS FACULTY ACTIVITY ANALYSIS (Months 3-9)

- A. Development of Faculty Activity instruments
  - 1. Phase I
  - 2. Phase II
  - 3. Phase III
- B. Administration of Faculty Activity instruments
  - 1. Phase I administered to all SAMP faculty members ("What Is")
    - a. Data analyzed and percentages computed
  - 2. Phase II administered to all SAMP faculty members ("Ideal")
    - b. Data analyzed
  - 3. Phase III administered to Division Directors only
    - a. Data analyzed
- C. Long Range Planning Task Force meetings with faculty to discuss data

VI. DEVELOPMENT OF SCHOOL OF ALLIED MEDICAL PROFESSIONS FACULTY INTERVIEW INSTRUMENT (Months 4-6)

- A. First draft of interview instrument prepared
- B. Identification of key SAMP faculty members for pretest
- C. Interviews
  - 1. First pretest with key faculty members
  - 2. Evaluation and revision of instrument
  - 3. Second pretest with key faculty members
  - 4. Evaluation and revision of instrument
- D. Final interview instrument prepared

VII. DETAILED COURSE IDENTIFICATION AND ANALYSIS (Months 4-6)

- A. Didactic
  - 1. Times
  - 2. Modes
  - 3. Detailed course descriptions
  - 4. Personnel involvement
    - a. Salaried SAMP faculty members
    - b. Non-salaried SAMP faculty members
  - 5. Classroom space utilized
  - 6. Laboratory space utilized
- B. Clinical
  - 1. Times
  - 2. Modes
  - 3. Detailed course descriptions
  - 4. Personnel involvement
    - a. Salaried SAMP faculty members
    - b. Non-salaried SAMP faculty members
    - c. Clinical facilities' staff members
  - 5. Laboratory space utilized

VIII. SCHOOL OF ALLIED MEDICAL PROFESSIONS FACULTY INTERVIEWED (Months 5-7)

- A. Interviews scheduled
- B. Sample questionnaire distributed
- C. Personal interviews conducted
- D. Collection of completed questionnaires

IX. DATA ANALYSIS: SCHOOL OF ALLIED MEDICAL PROFESSIONS FACULTY INTERVIEWS (Months 6-9)

- A. Development of cost formulas for SAMP faculty interviews
- B. Analyze data
  - 1. Per course
  - 2. Per division
  - 3. School total
- C. Identify SAMP division support staff

X. DEVELOPMENT OF CLINICAL PRECEPTOR INTERVIEW INSTRUMENT (Months 4-6)

- A. First deraft of preceptor interview instrument prepared
- B. Identification of SAMP faculty clinical coordinators
- C. Interviews
  - 1. First pretest with SAMP faculty clinical coordinators
  - 2. Evaluation and revision of instrument
- D. Identification of key clinical preceptors
  - 1. Pretest with key clinical preceptors
  - 2. Evaluation and revision
- E. Final interview instrument prepared

XI. IDENTIFICATION OF CLINICAL FACILITIES UTILIZED (Months 4-6)

- A. Identification of clinical sites
  - 1. Location
    - a. Local
    - b. In-state
    - c. Out-of-state by geographic region
  - 2. Type of facility
    - a. General hospitals
    - b. Veterans' Administration hospitals
    - c. Pediatric hospitals
    - d. Rehabilitation facilities
    - e. Psychiatric facilities
    - f. Other health care facilities
- B. Identification of clinical preceptors
- C. Selection of clinical facilities for on-site interviews and visits
  - 1. By type
  - 2. By location
  - 3. By division utilization

XII. CLINICAL PRECEPTOR INTERVIEWS (Months 5-9)

- A. Personal on-site interviews
    - 1. Interviews scheduled
    - 2. Travel arrangements made
    - 3. Sample questionnaire and letter of introduction mailed
    - 4. Personal interviews conducted
    - 5. Tour of facilities
- B. Discussion and evaluation of clinical instrument by team members
- C. Self-administered questionnaires to residual preceptors
    - 1. First mailing of introductory letter
    - 2. One week later, interview instrument with instructional letter and completion incentive (ginseng tea) mailed
    - 3. Briefing of SAMP division clinical coordinators
    - 4. Follow-up letter and addressed return card mailed to non-respondent
    - 5. Second instrument package mailed to non-respondents

XIII. DATA ANALYSIS: CLINICAL PRECEPTOR INTERVIEWS (Months 7-9)

- A. Development of cost formulas for clinical preceptor interviews
- B. Analyze data
    - 1. Per clinical
    - 2. Per division
    - 3. School total
- C. Computer analysis of clinical preceptor opinions
    - 1. Development of codebook
    - 2. Code data, keypunch
    - 3. Analysis of data
    - 4. Data interpretations

XIV. SCHOOL OF ALLIED MEDICAL PROFESSIONS' PHYSICAL FACILITY COSTS (Months 6-7)

- A. Building operating costs
    - 1. Electric
    - 2. Water
    - 3. Sewage
    - 4. Grounds
    - 5. Repairs
- B. Space utilization
    - 1. Square foot utilization by division
    - 2. Primary use
    - 3. Shared space

XV. PREPROFESSIONAL CURRICULUM ANALYSIS (Months 6-9)

- A. Outline curriculums per division
- B. Obtain modes data from general university and College of Medicine
- C. Calculate Student/Faculty ratios by mode
    - 1. Obtain course enrollment figures for one quarter
    - 2. Obtain number of sections taught per mode
    - 3. Calculate ratios
- D. Calculate theoretical faculty contact hours required

XVI. CALCULATION OF THEORETICAL OVERHEAD COSTS FOR NON-SAMP TEACHING UNITS (Months 8-9)

- A. Obtain O.S.U. personnel budget distributions
- B. Apply known O.S.U. distributions to theoretical distributions
- C. Calculation of Overhead Cost Factor

XVII. DEVELOPMENT OF TOTAL COST FORMULA (Months 7-10)

XVIII. PREPARATION OF REPORT (Months 9-12)

- A. Write first draft
- B. Prepare final report
- C. Papers written for publications

XIX. COMPREHENSIVE GRANT PROTOCOL WRITTEN (Month 12)

XX. GRANT SUBMITTED TO OTHER FUNDING AGENCIES (Month 12)

XXI. FINAL REPORT SUBMITTED TO DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE; NATIONAL INSTITUTES OF HEALTH (Month 12)

Appendix B. Curriculum Descriptions
Course Titles and Credit Hours
OSU:SAMP: Actual 1974-75

1. Circulation Technology
2. Medical Communications
3. Medical Dietetics
4. Medical Illustration
5. Medical Record Administration
6. Medical Technology
7. Occupational Therapy
8. Physical Therapy
9. Radiologic Technology
10. Respiratory Technology

CIRCULATION TECHNOLOGY

SUGGESTED SCHEDULING PLAN 1974-75

Preprofessional

Autumn		Winter		Spring	
FIRST YEAR					
English 100 or		English 100 or		Chem 123	5
Social Science	5	Social Science	5	Bot/Zoo 110	5
Chem 121	5	Chem 122	5	Phys Ed	1
UVC 100.05	1	Math 151	5	Humanities or	
Phys Ed	1	Phys Ed	1	Social Science	5
Math 159.01	3				
Math 159.02	2				
SECOND YEAR					
Social Science	5	Physics 111	5	Physics 112	5
Elective	5	Microbiology 509	5	Social Science or	
Bot/Zoo 111	5	Humanities	5	Humanities	5
Humanities	3	Elective	3	Elective	5
				Humanities	3

Professional

Autumn		Winter		Spring	
THIRD YEAR					
Physiology 311	5	Physiology 312	5	Cir.Tech. 410	8
Elective	3-5	Elec.Engr. 400	5	Cir.Tech. 420	5
Elective	3-5	Cir.Tech. 400	5	Pharmacology 600	3
Al.Med. 694.01	3	Al.Med. 694.01	1	Elective	3
				Al.Med. 694.01	1
FOURTH YEAR					
Cir.Tech. 550	7	Cir.Tech. 560	7	Cir.Tech. 570	7
Cir.Tech. 551	8	Cir.Tech. 561	8	Cir.Tech. 571	8
Al.Med. 693	1	Al.Med. 693	1	Al.Med. 693	1
Al.Med. 694.01	1	Al.Med. 694.01	1	Al.Med. 694.01	1

MEDICAL COMMUNICATIONS

SUGGESTED SCHEDULING PLAN 1974-75

Autumn		Winter		Spring	
		Preprofessional			
FIRST YEAR					
English 100 or Sociology 201	5	English 100 or Sociology 201	5	Humanities	5
Math 116	5	Humanities	5	Communic.105 or 110 or 201	5
Bot/Zoo 110	5	Bot/Zoo 111	5	Phys Ed	1
Phys Ed	1	Phys Ed	1	Nat.Sci.Elective	5
UVC	1				
SECOND YEAR					
Communic. 209	3	Psych 100	5	Communic. 225	5
Communic. 210	3	Humanities	5	Psych 210 or 230 or 101	5
Econ 100 or 200	5	Photography 574	5	Classics 210	3
Elective	5	English 305	3	Elective	5
		Professional			
THIRD YEAR					
Anatomy 200	6	Phys.Ther. 522	2	Med.Com. 525	4
Phys.Ther. 521	2	Communic. 510	5	Al.Med. 591	3
Med.Com. 400	3	Communic. 515	5	Al.Med. 650	3
Elective	5	Med.Com. 520	5	Al.Med. 693 or 694.03	3
Elective	3			Elective	3
FOURTH YEAR					
Communic. 701.01	4	Med.Com. 550	8	Med.Com. 560	8
Educ. C & F 675	4	Al.Med. 693 or 694.03	3	Al.Med. 693 or 694.03	3
Al.Med. 630	3	Elective	3	Elective	3
Al.Med. 693 or 694.03	3				
Med.Com. 595	3				

MEDICAL DIETETICS

SUGGESTED SCHEDULING PLAN 1974-75

Preprofessional

Autumn		Winter		Spring	
FIRST YEAR					
English 100 or		English 100 or		Psychology 100	5
Sociology 101/201	5	Sociology 101/201	5	Humanities or	
Chemistry 101/121	5	Chemistry 102/122	5	Bot/Zoo 110	5
Mathematics	5	Bot/Zoo 110 or		Phys Ed	1
Phys Ed	1	Humanities	5	Speech Com. 105/110	5
UVC 100.05	1	Phys Ed	1		

Professional

Autumn		Winter		Spring	
SECOND YEAR					
Anatomy 200	6	Physiology 311	5	Physiology 312	5
Economics 100	5	Home Ec 310	5	Home Ec 314	5
Humanity	5	Microbiology 509	5	Social Science	5
		Med.Diet. 201	1		
THIRD YEAR					
Med.Diet. 410	6	Med.Diet. 521	6	Med.Diet. 522	6
Med.Diet. 411	1	P.Chem. 312	4	Med.Diet. 422	3
Med.Diet. 420	3	Humanity	5	Prev.Med. 623	2
P. Chem. 311	4	Med.Diet. 421	3	Psych. 230	5
Al.Med. 630	3				
FOURTH YEAR					
Med.Diet. 637	5	Med.Diet. 645	10	Med.Diet. 646	1
Med.Diet. 638	5	Elective	5	Elective	5
Elective	5				

Summer

Med.Diet. 523	6
Med.Diet. 636	3
Elective	5
Al.Med. 694.04	3

MEDICAL ILLUSTRATION

SUGGESTED SCHEDULING PLAN 1974-75

Autumn		Winter		Spring	
		Preprofessional			
FIRST YEAR					
Art 170	5	Art 171	5	Art 175	5
Humanities	5	Social Science or		Social Science	5
English 100 or		English 100	5	Eng.Graph. 122	3
Social Science	5	Eng.Graph. 121	3	Phys Ed	1
UVC 100.05	1	Phys Ed	1	Elective	3
Phys Ed	1	Elective	3		
SECOND YEAR					
Art 180	5	Art 272	5	Art Elective	5
Humanities	4	Humanities	4	Humanities	4
Botany/Zoo 110	5	Zoology 231	5	Photography 551	5
Social Science	5	Photography 201	5	Zoology 232	5
		Professional			
THIRD YEAR					
Med. Illus. 640	5	Med. Illus. 640	5	Med. Illus. 640	5
Anatomy 200	6	Anatomy 693 (701)	5	Anatomy 700	6
Med. Illus. 635	3	Med. Illus. 635	3	Med. Illus. 693	3
Med. Illus. 693	3	Elective	3		
FOURTH YEAR					
Med. Illus. 640	5	Med. Illus. 640	5	Med. Illus. 640	5
Med. Illus. 100	0	Anatomy 693	3	Allied Med. 630	3
Art Ed. 604	5	Med. Illus. 693	3	Elective	3
Anatomy 693 (702)	5	Elective	5	Elective	5
Med. Illus. 693	3				

MEDICAL RECORD ADMINISTRATION

SUGGESTED SCHEDULING PLAN 1975-76

Autumn		Winter		Spring	
		Preprofessional			
FIRST YEAR					
Zoology 110	5	Zoology 111	5	Psychology 100	5
English 100 or Soc 101/201	5	English 100 or Soc 101/201	5	Humanities	5
Math 116	5	Statistics 125	5	Elective	5
Phys Ed	1	Phys Ed	1	Phys Ed	1
UVC 100.05	1				
SECOND YEAR					
Humanities	5	Zoology 232	5	Micro 509	5
Classics 210	3	Humanities	5	Econ 100/200	5
Elective	5	Elective	3	Elective	3
Anatomy 200-D	6	Pharmacy 270	5	Communication 225	5
		Professional			
THIRD YEAR					
MRA 501	5	MRA 502	5	MRA 503	5
Phys.Ther. 521	2	Phys.Ther. 522	2	Al.Med. 650	3
Pathology 505	3	Al.Med. 530	3	Al.Med. 520	2
C/S 211	4	Bus.Adm. 500	3	Al.Med. 591	3
Al.Med. 694.06	5	C/S 550	5	Elective	5
FOURTH YEAR					
MRA 525	2	MRA 510	3	MRA 542	8
MRA 541	3	MRA 526	5	MRA 595	2
MRA 595	2	MRA 541	3	Al.Med. 693	2-4
Al.Med. 630	3	MRA 595	1		
Elective	3-5	Elective	3-5		

MEDICAL TECHNOLOGY

SUGGESTED SCHEDULING PLAN 1974-75

Autumn		Winter		Spring	
		Preprofessional			
FIRST YEAR					
Chem 121	5	Chem 122	5	Chem 123	5
Math 150	5	English 100 or Social Science	5	Social Science or Humanities	5
English 100 or Social Science	5	Phys Ed	1	Phys Ed	1
Phys Ed	1	Statistics 125	5	Elective	5
UVC 100.05	1				
SECOND YEAR					
Chem 211	3	Foreign Lang. 104	5	Social Science or Humanities	5
Foreign Lang. 103	5	Social Science	5	Electives	8-10
Biological Science	5	Humanities	5	Humanities	3
Humanities	3	Elective	3		
		Professional			
THIRD YEAR					
Phys Chem 311	4	Phys Chem 312	4		
Microbiology 607	5	Med.Tech. 480	5		
Elec. (BioSc-C)	5	Botany 662	5		
Pathology 305	3	Elective	2-4		
FOURTH YEAR					
Pathology 502	3	Pathology 503	3	Pathology 504	5
Med.Tech. 512	9	Med.Tech. 513	9	Med.Tech. 514	9

Summer

Pathology 501	3
Med.Tech 511	9
Med.Tech 508	3

OCCUPATIONAL THERAPY

SUGGESTED SCHEDULING PLAN 1974-75

Autumn		Winter		Spring	
		Preprofessional			
FIRST YEAR					
English 100	5	Bot/Zoo 110	5	Chemistry 101	5
Psychology 100	5	Soc 101 or Hum.	5	Art 290/190	3-5
Math 116	5	Math 117	5	Humanities	5
Phys Ed	1	Phys Ed	1	Psych 220	3
UVC	1			Phys Ed	1
SECOND YEAR					
Soc. 201 or Hum.	5	Sociology 202	5	Al.Med. 425	3
Psychology 331	3	Psychology 332	3	Anatomy 200	6
Physics 111	5	Classics 210	3	Occ.Ther. 315	3
Educ.INTEC 255	4	Psych 230	5	Educ.INTEC 255	4
		Professional			
THIRD YEAR					
Anatomy 201	5	Zoology 232	5	Occ.Ther. 685	6
Occ.Ther. 435	4	Occ.Ther. 451	5		
Occ.Ther. 540	3	Occ.Ther. 661	5		
Occ.Ther. 450	5	Occ.Ther. 594	2		
Occ.Ther. 452	3	Al.Med. 530	3		
		Occ.Ther. 545	2		
Summer					
Occ.Ther. 560	3				
Occ.Ther. 662	4				
Occ.Ther. 541	3				
Occ.Ther. 545	2				
Electives	6				
FOURTH YEAR					
Occ.Ther. 670	3	Occ.Ther. 685	6	Occ.Ther. 664	5
Occ.Ther. 663	5			Occ.Ther. 675	3
Pathology 505	3			Al.Med. 693	3
Al.Med. 630	3			Al.Med. 591	3
Electives	3			Al.Med. 520	2
				Electives	2

PHYSICAL THERAPY

SUGGESTED SCHEDULING PLAN 1974-75

Autumn		Winter		Spring	
		Preprofessional			
FIRST YEAR					
English 100 or		English 100 or		Bot/Zoo 110	5
Social Science	5	Social Science	5	Social Science	5
Mathematics	5	Mathematics	5	Phys Ed	1
Phys Ed	1	Chem 102 or 122	5	Elective	5
Chem 101 or 121	5	Phys Ed	1		
UVC 100.05	1				
SECOND YEAR					
Elective	5	Anatomy 200 or		Psych 100 or	
Physics 111	5	Psych 100/300	5-6	Anatomy 200	5-6
Humanities	5	Physics 112	5	Humanities	5
Elective	3	Humanities	5	Elective	5-8
		Elective	3		
		Professional			
THIRD YEAR					
Phys.Thr. 480	3	Phys.Thr. 481	5	Phys.Thr. 482	3
Anatomy 201	5	Phys.Thr. 495	3	Al.Med. 425/625	3
Physiology 311	5	Physiology 312	5	Psych	3-5
Elective	3	Elective or		Elective	5-8
		Al.Med. 425	3		
FOURTH YEAR					
Phys.Thr. 521	3	Phys.Thr. 522	3	Phys.Thr. 588	5
Phys.Thr. 541	4	Phys.Thr. 542	4	Phys.Thr. 543	4
Pathology 505	3	Phys.Thr. 585	3	Al.Med. 520	2
Al.Med. 630	3	Al.Med. 530	3	Al.Med. 694.09	1
Elective	5	Elective	5	Al.Med. 591	3

RADIOLOGIC TECHNOLOGY

SUGGESTED SCHEDULING PLAN 1974-75

Autumn		Winter		Spring	
		Preprofessional			
FIRST YEAR					
English 100 or		Social Science or		Bot/Zoo 110 or	
Social Science	5	English 100	5	Humanities	5
Chem 101/121	5	Phys Ed	1	Social Science	5
Math 116 or 121 or		Bot/Zoo 110 or		Elective	5
Math 150	5	Humanities	5	Phys Ed	1
UVC 100.05	1	Chem 102/122	5		
Phys Ed	1				
SECOND YEAR					
Physics 111	5	Physics 112	5	Anatomy 200	6
Social Science	5	Elective	5	Elective	3
Al.Med. 101	2	Humanities	3	Humanities	3
Humanities	5	Elective	5	Elective	5
		Professional			
THIRD YEAR					
Rad.Tech. 412	4	Rad.Tech. 430	4	Rad.Tech. 555	5
Rad.Tech. 471	3	Rad.Tech. 472	3	Rad.Tech. 556	5
Supportive Elec.	3	Al.Med. 694.10	1	Rad.Tech. 557	5
Rad.Tech. 440	6	Supportive Elec.	5		
		Rad.Tech. 440	6		
Summer					
Rad.Tech. 201	2				
Rad. Tech. 411	4				
Rad.Tech. 420	3				
Rad.Tech. 440	6				
Al.Med. 694.10	2				
FOURTH YEAR					
Rad.Tech. 530	3	Rad.Tech. 540	6	Rad.Tech. 540	6
Rad.Tech. 540	6	Rad.Tech. 590	4	Al.Med. 520	2
Supp.Elec.	3-5	Rad.Tech. 565	2	Elective	5-6
Al.Med. 694.10	3	Supp.Elec.	3-5		

Summer

8 Weeks of arranged
Clinical Experience

RESPIRATORY TECHNOLOGY

SUGGESTED SCHEDULING PLAN 1975-76

Preprofessional

Autumn		Winter		Spring	
FIRST YEAR					
Phys Ed	1	Phys Ed	1	Phys Ed	1
English 100	5	Humanities	5	Bot/Zoo 110	5
Math 159.01/159.02	5	Chemistry 122	5	Social Science	5
Chemistry 121	5	Psychology 100	5	Free Elective	3-5
UVC 100	1				
SECOND YEAR					
Physics 111	5	Physics 112	5	Anatomy 200	6
Humanities	5	Humanities	5	Micro 509	5
Econ 100	5	Elective	5-6	Psych 210 or 230	5
Elective	3				

Professional

Autumn		Winter		Spring	
THIRD YEAR					
Physiology 311	5	Physiology 312	5	Pharmacy 470	4
Resp.Tech. 300	3	Statistics 125	5	Al.Med. 425	3-5
Resp.Tech. 320	4	Resp.Tech. 400	6	or Home Ec 363	
Resp.Tech. 489.01	2	Resp.Tech. 489.02	2	Resp.Tech. 420	3
Professional Elec.	2-5			Resp.Tech. 489.03	2
				Resp.Tech. 595	1
				Prof. Elective	2-3
FOURTH YEAR					
Phys.Ther. 521	2	Educ. 435 or	3-5	Resp.T.	5
Pathology 505	3	Educ. 672		10 hrs.	
Resp.Tech. 500	3	Resp.Tech. 520	5		
Resp.Tech. 489.06	2	Resp.Tech. 489.09	1		
Resp.Tech. 489.08	1	Resp.Tech. 489.07	2		
Bus.Admn. 500 or	3	Resp.Tech. 595	1		
Al.Med. 630		Prof. Elective	2-5		
Prof. Elective	2-5				
Summer					
Resp.Tech. 460	5				
Resp.Tech. 440	3				
Resp.Tech. 489.04	2				
Resp.Tech. 489.05	2				
Resp.Tech. 595	1				

Appendix C. Didactic Questionnaire

1. Procedure
2. Questionnaire
3. Staff Introduction Letter
4. Letter to Former Faculty
5. Sample Questionnaire
6. Notes for Appointments and Multiple Courses
7. Appointment Reminder
8. Thank You Note

DIDACTIC DATA COLLECTION PROCEDURE

I. Development of SAMP Faculty Interview Instrument
  A. Preparation of first draft of interview instrument
  B. Identification of key SAMP faculty members for pre-test
  C. Interviews
    1. First pre-test with key faculty members
    2. Evaluation and revision of instrument
    3. Second pre-test with key faculty members
    4. Evaluation and revision of instrument
  D. Preparation of final interview instrument

II. Detailed Course Identification and Analysis by Program
  A. Times
  B. Modes
  C. Detailed course descriptions
  D. Personnel Involvement
    1. On-site faculty
      a. Divisional
      b. Other SAMP
    2. Off-site
      a. Guest Lectures
      b. Clinical personnel
  E. Classroom space utilization

III. SAMP Faculty Interviews
  A. Interviews scheduled
  B. Pre-Interview information distributed
    1. Introductory memorandum
    2. Sample questionnaire
  C. Personal interviews conducted with total population
  D. Completed questionnaires collected
  E. Thank you notes sent

SCHOOL OF ALLIED MEDICAL PROFESSIONS

COST STUDY

SAMP Faculty Questionnaire

DIVISION ________________________________

COURSE # __________ CRDT. HRS. ________________

QUARTER __________ BLDG. __________ RM(S). ________

INSTRUCTOR ______________________________

INTERVIEWER _____________________________

DATE ___________________________________

C.2.1

SCHOOL OF ALLIED MEDICAL PROFESSIONS

COST STUDY

1974-1975

INSTRUCTIONS:

Please read entire questionnaire before beginning.

1. Was this course taught each week on the day(s) and time(s) listed below? ____Yes ____No. (If no, please make corrections below. If weekly hours were irregular, please note).

	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.
Lecture						
Laboratory						
Seminar						
Independent or Group Studies/ Research						
Clinical						
____________ Other						

Total student contact hours ____________

2. a. Did you have primary teaching responsibility for this course (60% or more)? _____Yes _____No (If yes, skip to 2c.)

   b. If not, was this course team taught? _____Yes _____ No. (If yes, please indicate name of colleague in 3a.)

   c. How many hours per week for each of the following activities did you have teaching responsibility? (Please estimate.)

Lecture _____ hours per week

Laboratory _____

Seminar _____

Independent Study _____

Clinical _____

_______________ Other _____

3. a. Please list those who had secondary teaching responsibility. (Include those who instructed students on a regular weekly basis but did not have primary responsibility.) If no one assisted, check N/A _____.

A. _______________________________ Name

_______________________________ Title-Division

Lecture _____ hours per week

Laboratory _____

_______________ Other _____

B. _______________________________ Name

_______________________________ Title-Division

Lecture _____ hours per week

Laboratory _____

_______________ Other _____

4. a. Were guest lecturers used? (Include any faculty member or professional who was used as a lecturer, a discussant, an evaluator, or who gave demonstrations.) _____Yes _____No (If no, skip to question 5.)

   b. Please list those lecturers who are members of the SAMP.

Name	Title-division	Total Lecture hours for this course

   c. Please list those lecturers who are not members of the SAMP.

Name	Title-division	Total Lecture hours for this course

5. a. Were graduate teaching assistants used for this course? _____Yes _____No (If no, skip to question 6.)

   b. Please list GTA's.

Name	Division	Used as i.e., grader, lecturer, etc.	Total quarter hours

6. a. Were CAI programs used for this course? _____Yes _____No

b. Please list CAI programs.

____

Name of program Author(s)

____

____

7. a. Were other self-instructional media used? _____Yes _____No

b. Please list.

____

Title of program or text Producers

____

____

____

8. How many students were enrolled in this course? _______________

9. What percentage of the students enrolled in this course were from each of the following divisions?

Circulation Technology _____ Percent
Medical Communications _____
Medical Dietetics _____
Medical Illustration _____
Medical Record Administration _____
Medical Technology _____
Occupational Therapy _____
Physical Therapy _____
Radiologic Technology _____
Respiratory Technology _____
_______________ _____
Other, please specify

TEACHING ACTIVITIES RELATED TO THIS COURSE

	ESTIMATE IN HOURS PER WEEK*			ESTIMATE IN HOURS PER QUARTER GUEST LECTURERS	
	PRIMARY INSTRUCTOR	SECONDARY INSTRUCTOR(S)		SAMP LECTURER(S)	NON-SAMP LECTURER(S)
		A.	B.		
1. PREPARATION FOR TEACHING (e.g., instructional aides, CAI, manuals, handouts, maintaining equipment used in teaching this course)	______	______	______	______	______
2. ADVISING STUDENTS (in this course, but not during class times)	______	______	______	______	______
3. RESEARCH/PROFESSIONAL IMPROVEMENT (as related to this course or it's subject content)	______	______	______	______	______
4. ADMINISTRATIVE DUTIES (related to the teaching of this course, e.g., grades, arranging for guest lecturers)	______	______	______	______	______
5. OTHER ________________ (Please specify)	______	______	______	______	______

*If activity did not occur weekly, to estimate hours per week, take total hours per quarter and divide by 10.

TO: DIVISION DIRECTORS AND FACULTY

FROM: Ronald L. Harper, Ph.D.
Associate Director

RE: New Research Project Team Member

DATE: February 2, 1976

The purpose of this memo is to introduce Ms. Jeannette Fraser as a member of our research project, "Cost Analysis of Ten Allied Health Programs." Her background is in Health Planning and Political Science.

Initially, Jeannette's responsibilities will include meeting with Division Directors and faculty members in the School to determine the amount of input to our various courses from physicians and other professionals not on our school faculty. This study is an effort to determine total instructional costs. I would appreciate your assisting Jeannette when she calls to set up appointments in the near future.

Do not hesitate to contact me if you have any questions in this regard. Again, I appreciate your help and cooperation.

RLH/rr

Dear

The Ohio State University School of Allied Medical Professions is conducting a cost expenditure study entitled: "Cost Analysis of Ten Allied Health Programs." As part of that study we are requesting information about each course taught from June 1974 - July 1975. Enclosed is a questionnaire for each of the courses that our records show you taught during the period under study.

We realize that some of the information we are requesting may require access to your course files, which may still be here at Ohio State University. In light of that, please answer the questions to the best of your knowledge. We will attempt to fill in any omissions with the help of your former administrative staff here at the School of Allied Medical Professions.

The information we obtain from these questionnaires will be used to establish the personnel costs associated with educating students in both the didactic and clinical phases of the baccalaureate programs in the school. To insure the comprehensiveness of this study, your input is vital.

We are enclosing a sample questionnaire and a prepaid addressed envelope for your convenience. If you have any questions about the purpose of the study, or the questionnaire, please feel free to call me collect at: (614) 422-8644. If minor questions should arise or if the course list is incorrect, please attach an explanatory note or write in the margins. We would appreciate receiving your completed questionnaire(s) no later than

Thank you for your time and co-operation.

Sincerely,

Gerald Newhouse

Gerald Newhouse
Research Assistant
Cost Expenditure Study

GN/jj

SCHOOL OF ALLIED MEDICAL PROFESSIONS

COST STUDY
SAMP Faculty Questionnaire

DIVISION Occupational Therapy

COURSE # 000 CRDT. HRS. 05

QUARTER WINTER BLDG. AM RM(S). 000-00 U.H.

INSTRUCTOR ERNESTINE PEABODY

INTERVIEWER SELF

DATE 2/4/76

SAMPLE

SCHOOL OF ALLIED MEDICAL PROFESSIONS
COST STUDY
1974-1975

INSTRUCTIONS

Please read entire questionnaire before beginning.

1. Was this course taught each week on the day(s) and time(s) listed below? ____ yes [✓ no] (If no, please make corrections below. If weekly hours were irregular, please note.)

	Mon	Tues	Wed	Thur	Fri	Sat
Lecture	~~1-2~~ 1-3:00		1-2		1-2	
Laboratory		~~1-3~~		1-3		
Seminar						
Independent or Group Studies/ Research						
Clinical		1-3				
________ other						

Total student contact hours ~~7~~-8

2. a. Did you have primary teaching responsibility for this course (60% or more)? X yes ____ no (If yes, skip to 2c.)

b. If not, was this course team taught? ____ yes ____ no (If yes, please indicate name of colleague in 3a.)

c. How many hours per week for each of the following activities did you have teaching responsibility? (Please estimate.)

Lecture 4 hours per week

Laboratory ____

Seminar ____

Independent Study ____

Clinical ____

________ ____
other

3. a. Please list those who had secondary teaching responsibility. (Include those who instructed students on a regular weekly basis but did not have primary responsibility.) If no one assisted, check N/A ____. *PLEASE ADD ADDITIONAL SECONDARY INSTRUCTORS ON BACK OF THIS PAGE

A. MR. Smith
name

PHYSTHER - PHYSICAL THERAPY
title-division

Lecture ____ hours per week

Laboratory ~~4~~ 2

CLINICAL 2
other

B. ________
name

____
title-division

Lecture ____ hours per week

Laboratory ____

________ 301
other

4. a. Were guest lecturers used? (Include any faculty member or professional who was used as a lecturer, a discussant, an evaluator, or who gave demonstrations.)
X yes ____ no (If no, skip to question 5.)

b. Please list those lecturers who are members of the SAMP.

Name	Title-division	Total lecture hours for this course
MS. S JONES	O.T. OCC. THERAPY	2

c. Please list those lecturers who are not members of the SAMP.

Name	Title-division	Total lecture hours for this course
MRS CLARE SMITH	SOCIAL WORKER DODD	1
MR. N. ROCKWALL	ART THERAPIST	1
MRS. - MARY MARVEL	PATIENT	1
DR. I NOE	RIVERSIDE HOSP.	1

5. a. Were graduate teaching assistants used for this course?
X yes ____ no (If no, skip to question 6.)

b. Please list GTAs.

Name	Division	Used as i.e., grader, lecturer, etc.	Total quarter hours for this course
MR. C. STUDENT		LAB. ASST. GRADER	40 HRS.

6. a. Were CAI programs used for this course? ____ yes X no

b. Please list CAI programs.

____
Name of program author(s)

____

____

7. a. Were other self-instructional media used? ____ yes ____ no

b. Please list.

"ART AS THERAPY" 16MM FILM HOUSTON FILM CORP.
Title of program or ~~t~~ext producers

"ART AIDE" VIDEO TAPE A.V.T.V. O.S.U.-& P.T. DEPT.

____

____

8. How many students were enrolled in this course? 100

9. What percentage of the students enrolled on this course were from each of the following divisions?

Circulation Technology	____ percent
Medical Communications	8
Medical Dietetics	
Medical Illustration	
Medical Record Administration	
Medical Technology	
Occupational Therapy	60
Physical Therapy	30
Radiologic Technology	
Respiratory Technology	
FINE ARTS STUDENTS other, please specify	2

TEACHING ACTIVITIES
RELATED TO THIS COURSE

ROUND OFF TO NEAREST 1/2 HR.

THIS SECTION IS OPTIONAL ↓

	ESTIMATE IN HOURS PER WEEK*			ESTIMATE IN HOURS PER QUA GUEST LECTURERS	
	PRIMARY INSTRUCTOR	SECONDARY INSTRUCTOR(S) A.	B.	SAMP LECTURER(S)	NON-SAMP LECTURER(
1. PREPARATION FOR TEACHING (e.g., instructional aides, CAI, manuals, handouts, maintaining equipment used in teaching this course)	3	2		1/2 HR.	
2. ADVISING STUDENTS (in this course, but not during class times)	1	2		N/A	
3. RESEARCH/PROFESSIONAL IMPROVEMENT (as related to this course or it's subject content)	2	1		N/A	
4. ADMINISTRATIVE DUTIES (related to the teaching of this course, e.g., grades, arranging for guest lecturers)	1	1/2 HR.		1/2 HR.	
5. OTHER ______________ (please specify)					

*If activity did not occur weekly, to estimate hours per week, take total hours per quarter and divide by 10.

PHONING FOR APPOINTMENTS

Hello. I am calling regarding the Cost Study being conducted by the School of Allied Medical Professions. We would like to discuss some of the courses taught by ______________ last year. If possible, could I set up an appointment at his/her convenience? Gerry Newhouse/ Jeannette Fraser will come to his/her office at ________________. His/her number is: 422-8644 if there are any questions or appointment changes. I will be sending you a memo and a sample questionnaire so that he/she will have an idea of the type of information needed. Thank you.

NOTE ATTACHED TO QUESTIONNAIRES MAILED
(When courses duplicate)

If you feel data is identical for each of the four quarters you taught this course, then fill questionnaire for ONE quarter only and we will multiply data by four. If not, please give year average as data. Specify ONE QUARTER or YEAR AVERAGE. Thank you.

TO:

FROM:

RE: COST STUDY INTERVIEW

The purpose of this memo is to remind you of our appointment in your office on ____________ at __________.

As part of our research project "Cost Analysis of Ten Allied Health Programs", we will be requesting information relating to the courses you taught from July 1974 - June 1975.

The information we obtain from this interview will be used to establish the personnel costs associated with educating students in both the didactic and clinical phases of the baccalaureate programs in our school. No proof, justification, or verification of this information will be called for now or in the future; therefore, we ask for your judicious and objective input.

A sample interview form is attached to familiarize you with the questions that will be asked. If you have any questions relating to this form or the Cost Study in general, please feel free to contact me at 2-_________.

According to our records, the courses listed below were taught by you during the year under study. If you find any errors in this listing, please bring them to my attention as soon as possible, so corrections can be made before our interview.

COURSES TAUGHT JULY 1974 - JUNE 1975:

SUMMER, 1974 __________ __________ __________ __________

AUTUMN, 1974 __________ __________ __________ __________

WINTER, 1975 __________ __________ __________ __________

SPRING, 1975 __________ __________ __________ __________

SCHOOL OF ALLIED MEDICAL PROFESSIONS

COST STUDY

#F.T.F. = 57.25

SUPPORT STAFF

CIRCULATION TECH.

DEPT. #2504

MEDICAL COM.

MEDICAL DIET.

CLINICAL PRECEPTORS = 187

MEDICAL ILL.

CLASSES + LABS + CLINICALS

MEDICAL REC. ADMIN.

OF SAMP STUDENTS = 532

MEDICAL TECH.

DIDACTIC CURRICULUM -- PRE-PROFESSIONAL

O.T.

OPERATING BUDGETS!!!

P.T.

RAD. TECH.

MODES OF INSTRUCTION (S, D, L)

RESP. TECH.

ADMIN.

FISCAL YEAR 1974 -- 1975

COST STUDY TEAM MEMBERS

DR. RONALD L. HARPER

BLDG. #305

SPACE UTILIZATION SQ. FT.

GERRY NEWHOUSE

JEANNETTE FRASER

138,452.86 -- 42,355.89 = 96,096.97

TOTAL SQ. FT.	ASSIGNED SPACE	SHARED SPACE

JOAN JENNINGS

MADELEINE HARE

THANK YOU FOR YOUR COOPERATION

C.8

Appendix D. Student Enrollment

CSU:SAMP: Actual 1974-75

Appendix D

OSU:SAMP:Cost Study: Program Cost Analysis: Student Enrollment
Actual 1974-75

Program	STUDENT ENROLLMENT Freshman	Sophmore	Junior	Senior	Total	Pre Professional Total	Professional Total
1. Circulation Technology	12	10	11	14	47	22	25
2. Medical Communications	20	19	13	8	60	39	21
3. Medical Dietetics	23	24	23	27	97	23	74
4. Medical Illustration	6	4	5	5	20	10	10
5. Medical Record Administration	14	11	14	12	51	25	26
6. Medical Technology	16	23	22	48	109	39	70
7. Occupational Therapy	30	29-44	48	42	193	59	134
8. Physical Therapy	80	80	80	59	299	160	139
9. Radiologic Technology	15	24	7	14	60	39	21
10. Respiratory Technology	12	3	12	24	51	15	36
TOTAL					987	431	556

Appendix E. Faculty Activity Analysis

OSU:SAMP: Analysis

1. Procedure
2. Phase I: Faculty Actual: Letter and Form
3. Phase II: Faculty Ideal: Letter and Form
4. Phase III: Director Ideal: Letter and Form
5. Phase IV: Administrators Ideal: Letter and Form
6. FAA Profile Analysis
7. FAA Direct Contact Teaching Analysis

FACULTY ACTIVITY ANALYSIS PROCEDURE

I. Instrument Development
   A. Preparation of first draft of data collection instruments
   B. Long-range Planning Task Force review and revision
   C. Cost Study Staff review and revision
   D. Preparation of Final data collection instrument

II. Phase I: Faculty "Actual" Administration
   A. Anonymous self-administered questionnaires distributed
   B. Average hours per week actual faculty responses received (Phase I data)
   C. Data aggregated by division
      1. Hours per week
      2. Percentage of Total Average Hours per week (Phase II data)

III. Phase II: Faculty "Ideal" Administration
   A. Distribution of % averages per program questionnaires to SAMP faculty
   B. "Ideal" faculty distributions responses received
   C. Data aggregated and averaged by division (Phase III data)

IV. Phase III: Division Directors "Ideal" Administration
   A. Distribution of average "Ideal" faculty data for pertinent division
   B. "Ideal" configuration of faculty activity responses received
   C. Data aggregated and averaged by division (Phase IV data)

V. Phase IV: SAMP Administrators "Ideal" Administration
   A. Distribution of each division's administrative ideal for all ten programs
   B. SAMP Administrators "Ideal" average faculty activity distribution per program responses received
   C. Data aggregated and averaged by division (Phase V)

TO: SAMP Faculty

FROM: Long Range Planning Task Force

RE: Activity Analysis

DATE: February 2, 1976

The Long Range Planning Task Force is attempting to study the various types and distribution of our faculty's activities. The information which we are seeking will be needed to help to construct a long range plan for the continued development of the School. This plan will be used in the decision process as we move ahead in the next few years. The University's current quarterly activity analysis does not provide all of the information that is necessary and additionally contains information only for Summer and Autumn quarters. Therefore, we ask your cooperation in completing the attached forms.

Would you please:

1. Review your calendar for the 1975 year (January 1 thru December 31).
2. Construct an average work week using the attached questionnaire as a guide.
3. Record the time distribution of the major categories using the sub-categories as an indication of what could be contained in each major category.
4. Estimate time only to the nearest half hour (see example).
5. Return the completed questionnaire to the box in Mrs. Reggie Roberts' office (Room 106G) and cross your name off the list. Although your division name appears on the questionnaire, DO NOT PUT YOUR NAME ON THE FORM. Please return the form on or before Monday, February 9.

This is the first stage of a study that we hope to utilize in preparing a long range plan. It represents our attempt to determine "what is" and based on what you tell us, we will then ask you, "What ought to be?" It is an opportunity for you as a faculty member to have significant input to shaping your division's and the school's future. It is vitally important that each faculty member respond and that the response be as accurate as possible since the value of this planning instrument is directly related to the quality of the data it contains.

Your assistance is crucial to the success of the task force. Thank you in advance for your help.

LONG
RANGE
PLANNING
TASKFORCE
SCHOOL
OF
ALLIED
MEDICAL
PROFESSIONS

FACULTY ACTIVITY ANALYSIS

DIVISION: ______________________________

NOTE: Please read the entire form before completing and DO NOT PUT YOUR NAME on the form.

	Average Hours Per Week
I. TEACHING ACTIVITIES	
1. Teaching (Formal assignment for the following activities within and outside of SAHP or COM)	______
a) Classroom (Lecture) b) Classroom (Seminar) c) Laboratory d) Clinic (Patient centered teaching) e) Individual Studies (X93, 999) f) Continuing Education Classes	
2. Teaching Preparation and Student Evaluation	______
a) Developing instructional aids b) Monitoring equipment or materials c) Arranging for clinicals, labs, etc. d) Preparing other materials and lectures e) Setting up labs f) Evaluation of instructional activities g) Evaluation of student work, grading papers, etc.	
3. Course or Curriculum Development and Evaluation (General development and evaluation, preparation for future courses, other teaching support activities)	______
II. STUDENT CONTACT	
1. Advising and Counseling	______
a) Advising undergraduate students b) Advising graduate students (includes work associated with theses or projects but not included in I. 1e)	
2. Interviewing, Evaluating or Recruiting Prospective Students (include reviewing records, interviewing time, decision-making)	______
III. RESEARCH	
Curriculum, laboratory, clinical or systems oriented research, etc., which includes time spent writing proposals, collecting and analyzing data, and supervising or completing research projects.	______

	Average Hours Per Week
IV. GENERAL SUPPORT AND ADMINISTRATION	
1. Administration (filling out forms, time schedules, QAR's, budgets, etc.)	______
2. Committees - Attending and preparing for meetings (include Division, School, College, University)	______
V. PUBLIC SERVICE	
1. Consulting (include activities for which you are or are not paid a separate fee)	______
2. Service to profession in a professional capacity, service to outside state, national or professional organizations including membership on committees not covered in V. 1, or VI. 2)	______
3. Professional Practice (List time spent in professional practice and/or in providing patient care that does not involve clinical teaching included in I. 1d)	______
VI. PROFESSIONAL DEVELOPMENT	
1. Professional Improvement (taking graduate courses, readings in field to keep abreast of developments, etc.)	______
2. Professional Meetings (Conferences, workshops, seminars attended for self improvement)	______
3. Publications and Presentations - Time spent developing literature review, etc., and writing the paper or presentation (work not associated with or assigned to Category III) which is published in books, journals, student manuals (even though not widely published or copyrighted) etc., or presented at local, state or national meetings.	______
VII. OTHER ACTIVITIES (please specify on reverse side)	______
Total Ave. Hrs./Wk.	☐

Thank you for your input!

Please feel free to use the reverse of this form to explain any time allocations which you believe are ambiguous or might be misunderstood, or to make any comments you have.

2/3/76

TO: SAMP Faculty

FROM: Long Range Planning Task Force

RE: Faculty Activity Analysis - Phase II

DATE: April 7, 1976

In phase I of the Faculty Activity Analysis, we asked you to construct an average work week. The data you provided enabled us to determine "what is" an average faculty week. Now in phase II we would like you to review your division's average work week percentages, and provide us with additional feedback by filling in the blanks with percentages that you feel would be the "IDEAL", or what "ought to be" for your division.

Please keep the following considerations in mind when determining these percentages:

1. The percentages are intended to represent the whole division; individual faculty members (including yourself) might either wish to continue their present pattern of time use or to change it.

2. It might be necessary to establish new faculty positions to make the distributions possible.

This is an opportunity for you as a faculty member to have significant input in shaping the future of your division and the School.

Please return the completed form to the box in Mrs. Reggie Roberts' office (room 106G) and cross your name off the list. Although your division name appears on the form, DO NOT PUT YOUR NAME ON THE FORM. Please make every effort to return the completed form on or before Wednesday, April 14.

Your continued help and cooperation is crucial to the success of the planning task force. We will continue to provide you with feedback as the study progresses.

LONG RANGE PLANNING TASKFORCE SCHOOL OF ALLIED MEDICAL PROFESSIONS

E.3.1

FACULTY ACTIVITY ANALYSIS

-SAMPLE-

DIVISION: YOUR DIVISION

NOTE:

DO NOT PUT YOUR NAME on the form.

E.3.2

	YOUR DIVISIONS ACTUAL WEEKLY PERCENTAGES	"YOUR "IDEAL" PERCENTAGES.
I. TEACHING ACTIVITIES		
1. Teaching (Formal assignment for the following activities within and outside of SAMP or CON) a) Classroom (Lecture) b) Classroom (Seminar) c) Laboratory d) Clinic (Patient centered teaching) e) Individual Studies (X93, 999) f) Continuing Education Classes	20%	
2. Teaching Preparation and Student Evaluation a) Developing instructional aids b) Monitoring equipment or materials c) Arranging for clinicals, labs, etc. d) Preparing other materials and lectures e) Setting up labs f) Evaluation of instructional activities g) Evaluation of student work, grading papers, etc.	17%	
3. Course or Curriculum Development and Evaluation (General development and evaluation, preparation for future courses, other teaching support activities)	7.0%	
II. STUDENT CONTACT		
1. Advising and Counseling a) Advising undergraduate students b) Advising graduate students (includes work associated with theses or projects but not included in I. 1e)	8.3%	
2. Interviewing, Evaluating or Recruiting Prospective Students (include reviewing records, interviewing time, decision-making)	3.6%	
III. RESEARCH		
Curriculum, laboratory, clinical or systems oriented research, etc., which includes time spent writing proposals, collecting and analyzing data, and supervising or completing research projects.	4.7%	

SAMPLE

3/29/76

	"ACTUAL"	"IDEAL"
IV. GENERAL SUPPORT AND ADMINISTRATION		
1. Administration (filling out forms, time schedules, QAR's, budgets, etc.)	8.6%	
2. Committees - Attending and preparing for meetings (include Division, School, College, University)	5.0%	
V. PUBLIC SERVICE		
1. Consulting (include activities for which you are or are not paid a separate fee)	2.1%	
2. Service to profession in a professional capacity, service to outside state, national or professional organizations including membership on committees not covered in V. 1, or VI. 2)	3.0%	
3. Professional Practice (List time spent in professional practice and/or in providing patient care that does not involve clinical teaching included in I. 1d)	3.3%	
VI. PROFESSIONAL DEVELOPMENT		
1. Professional Improvement (taking graduate courses, readings in field to keep abreast of developments, etc.)	7.3%	
2. Professional Meetings (Conferences, workshops, seminars attended for self improvement)	3.0%	
3. Publications and Presentations - Time spent developing literature review, etc., and writing the paper or presentation (work not associated with or assigned to Category III) which is published in books, journals, student manuals (even though not widely published or copyrighted) etc., or presented at local, state or national meetings.	4.0%	
VII. OTHER ACTIVITIES ____ PLEASE SPECIFY	3.1%	
	100%	

Thank you for your input!

Please feel free to use the reverse of this form to explain any PERCENTAGES which you believe are ambiguous or might be misunderstood, or to make any comments you have.

TO: SAMP Division Directors

FROM: Long Range Planning Task Force

RE: Faculty Activity Analysis - Phase III

DATE: May 24, 1976

In Phase I of the Faculty Activity Analysis, we asked all faculty members to construct an average work week. The data that you provided was averaged for each division separately and returned to you. All faculty members were then asked to respond to Phase II by reviewing their division's average work week percentages. Their response provided a profile of your faculty's perceived "ideal work week."

The worksheet for the third and final phase of the Activity Analysis is attached. Please review column one, "what is," and column two, "ideal," for your division and furnish the Planning Task Force with data in percentages of what you as Division Director, consider to be the "way it should be."

When determining these percentages please consider:

(1) The percentages should represent what you as Division Director would like to see YOUR TOTAL DIVISION doing with their time. It may be quite similiar to the present patterns or you may wish that the percentage distributions be significantly rearranged.

(2) It might be necessary to establish new faculty positions to make the distributions possible. Do not feel restricted to present personnel and budgetary restraints.

All Division Directors and Planning Task Force members will meet to discuss the total activity analysis data shortly. Please make every effort to respond to Phase III, ON OR BEFORE TUESDAY, JUNE 1, 1976. Your expeditious response in this matter will be greatly appreciated.

Please return Phase III to Mrs. Reggie Roberts, room 106-G.

LONG RANGE PLANNING TASKFORCE SCHOOL OF ALLIED MEDICAL PROFESSIONS

DIVISION DIRECTOR ____________________

ACTIVITY ANALYSIS

	I "actual %"	II "ideal %"	III "director %"
TEACHING ACTIVITIES			
1. Teaching (formal assignment for the following activities within and outside of SAHP or COM)	____	____	____
a) Classroom (Lecture) b) Classroom (Seminar) c) Laboratory d) Clinic (Patient centered teaching) e) Individual Studies (X93, 999) f) Continuing Education Classes			
2. Teaching Preparation and Student Evaluation	____	____	____
a) Developing instructional aids b) Modifying equipment or materials c) Arranging for clinicals, labs, etc. d) Preparing other materials and lectures e) Setting up labs f) Evaluation of instructional activities g) Evaluation of student work, grading papers, etc.			
3. Course or Curriculum Development and Evaluation (General development and evaluation, preparation for future courses, other teaching support activities)	____	____	____
STUDENT CONTACT			
1. Advising and Counseling	____	____	____
a) Advising undergraduate students b) Advising graduate students (includes work associated with theses or projects but not included in I. 1e)			
2. Interviewing, Evaluating or Recruiting Prospective Students (include reviewing records, interviewing time, decision-making)	____	____	____
I. **RESEARCH**			
Curriculum, laboratory, clinical or systems oriented research, etc., which includes time spent writing proposals, collecting and analyzing data, and supervising or completing research projects.	____	____	____

	I	II	III
IV. **GENERAL SUPPORT AND ADMINISTRATION**			
1. Administration (filling out forms, time schedules, QAR's, budgets, etc.)	____	____	____
2. Committees - Attending and preparing for meetings (include Division, School, College, University)	____	____	____
V. **PUBLIC SERVICE**			
1. Consulting (include activities for which you are or are not paid a separate fee)	____	____	____
2. Service to profession in a professional capacity, service to outside state, national or professional organizations including membership on committees not covered in V. 1, or VI. 2)	____	____	____
3. Professional Practice (List time spent in professional practice and/or in providing patient care that does not involve clinical teaching included in I. 1d)	____	____	____
VI. **PROFESSIONAL DEVELOPMENT**			
1. Professional Improvement (taking graduate courses, readings in field to keep abreast of developments, etc.)	____	____	____
2. Professional Meetings (Conferences, workshops, seminars attended for self improvement)	____	____	____
3. Publications and Presentations - Time spent developing literature review, etc., and writing the paper or presentation (work not associated with or assigned to Category III) which is published in books, journals, student manuals (even though not widely published or copyrighted) etc., or presented at local, state or national meetings.	____	____	____
VII. OTHER ACTIVITIES (please specify on reverse side)			
	____	____	____

Thank you for your input!

____________________ ____ ____ ____

PLEASE USE THE BACK FOR
COMMENTS OR EXPLANATIONS.

TO: Dr. Atwell
Carolyn Burnett
Dave Broski

FROM: Ronald L. Harper

RE: Faculty Activity Analysis Results

Attached please find a complete set of the "Faculty Activity Analysis" results. Phase I percentages were derived from the hours reported by the faculty as representing an "average" work week which they were asked to construct. Phase II percentages represent a composite of what the faculty reported they thought represented an "ideal" distribution of activities for their division. (These figures included the Division Director's estimate). Phase III represents the Division Director's response to Phases I and II and is what he/she believes is "ideal" for the Division.

I would like to ask each of you to review the Phases I, II, and III and indicate what you believe should be "ideal" for each of the divisions. Your estimates should total to 100%. Please consider the state of the profession, the type of faculty that we have and are likely to be able to hire, and what you believe is a reasonable number of faculty for the division in question.

Please give your results to Reggie. I will compile them and send you all a copy. I also will send one to Jeff Caswell for use by the Long-Range Planning Task Force.

Thank you.

RLH/rr
Encl.

School of Allied Medical Professions
Faculty Activity Analysis

Division______________________________

Av. Hrs. Per Week	Percentage Distribution			
Phase I	Phase II	Phase III	Phase IV	Phase V
______	______	______	______	______

I. TEACHING ACTIVITIES

1. Teaching (Formal assignment for the following activities within and outside of SAMP or [illegible])
   - a) Classroom (Lecture)
   - b) Classroom (Seminar)
   - c) Laboratory
   - d) Clinic (Patient centered teaching)
   - e) Individual Studies (993, 999)
   - f) Continuing Education Classes
2. Teaching Preparation and Student Evaluation
   - a) Developing instructional aids
   - b) Monitoring equipment or materials
   - c) Arranging for clinicals, labs, etc.
   - d) Preparing other materials and lectures
   - e) Setting up labs
   - f) Evaluation of instructional activities
   - g) Evaluation of student work, grading papers, etc.
3. Course or Curriculum Development and Evaluation (Central development and evaluation, preparation for future courses, other teaching support activities)

E.5.2

II. STUDENT CONTACT

1. Advising and Counseling
   - a) Advising undergraduate students
   - b) Advising graduate students (includes work associated with theses or projects but not included in I. 1e)
2. Interviewing, Evaluating or Recruiting Prospective Students (Include reviewing records, interviewing time, decision-making)

III. RESEARCH

Curriculum, laboratory, clinical of systems oriented research, etc., which includes time spent writing proposals, collecting and analyzing data, and supervising or completing research projects.

Phase: II = Average Hours per week converted to percentage.
III = Average Percentage that faculty considered "Ideal" based on Phase II data.
IV = Average percentage that the Division Director considered "Ideal based on Phase III data.
V = Average percentage that the Administrative Staff considered "Ideal" based on Phase IV data.

Av. Hrs. Per Week	Percentage Distribution			
Phase I	Phase II	Phase III	Phase IV	Phase V
______	______	______	______	______

IV. GENERAL SUPPORT AND ADMINISTRATION

1. Administration (filling out forms, time schedules, QAR's, budgets, etc.)
2. Committees - Attending and preparing for meetings (Include Division, School, College, University)

V. PUBLIC SERVICE

1. Consulting (include activities for which you are or are not paid a separate fee)
2. Service to profession in a professional capacity, service to outside state, national or professional organizations including membership on committees not covered in V. 1, or VI. 2)
3. Professional Practice (List time spent in professional practice and/or in providing patient care that does not involve clinical teaching included in I. 1d)

VI. PROFESSIONAL DEVELOPMENT

1. Professional Improvement (taking graduate courses, readings in field to keep abreast of developments, etc.)
2. Professional Meetings (Conferences, workshops, seminars attended for self improvement)
3. Publications and Presentations - Time spent developing literature review, etc., and writing the paper or presentation (work not associated with or assigned to Category III) which is published in books, journals, student manuals, (even though not widely published or copyrighted) etc., or presented at local, state or national meetings.

VII. OTHER ACTIVITIES (please specify on reverse side)

Table FAA

OSU:SAMP:Program Cost Analysis: Faculty Activity Analysis Profile
Actual 1974-75

	Faculty Activities Percent of Total Time						
	Instruction						
Program	Direct Contact	Preparation Advising	Research	Public Service	Administration	Prof. Dev.	Average Hours per Week
1. Circulation Technology	25.5	20.9	7.9	21.4	8.0	16.3	67.2
2. Medical Communications	13.1	38.6	9.8	13.1	13.6	11.8	71.0
3. Medical Dietetics	27.3	34.8	5.9	5.9	11.6	14.5	47.2
4. Medical Illustration	19.3	23.5	1.6	40.8	11.0	3.8	44.5
5. Medical Record Administration	10.4	40.4	3.6	12.1	13.9	19.6	74.3
6. Medical Technology	40.0	36.0	1.3	.8	13.4	8.5	47.8
7. Occupational Therapy	17.1	49.6	3.4	5.9	11.9	12.1	54.8
8. Physical Therapy	24.7	43.7	2.5	6.4	12.1	10.6	47.9
9. Radiologic Technology	40.4	30.9	1.1	3.6	11.9	12.1	45.3
10. Respiratory Technology	31.8	35.6	1.5	8.9	4.2	18.0	47.2
Average	25.0	35.4	3.9	11.9	11.1	12.7	52.6

Table DC

OSU:SAMP:Cost Study: Faculty Teaching (Direct Contact) Activity Analysis
Actual 1974-75

	FAA: Phase	I	II	III	IV	V	Didactic Questionaire	Theoretical Construction
Program	Activity TOTAL Average Hours/Week	Faculty Actual DC Average Hours/Week	Faculty Actual DC as Percent of 40 Hour Week	Faculty Ideal DC Percent of 40 Hrs.	Director Ideal DC Percent of 40 Hrs.	Administrator Ideal DC Percent of 40 Hrs.	Percent of 40 Hrs. for 30 Weeks (1200)	Percent of 40 Hrs. for 30 Weeks (1200)
1. Circulation Technology	67.2	17.1	42.8	31.9	50.4	45.5	41.1	42.7
2. Medical Communications	71.0	9.3	23.3	35.5	44.4	42.3	11.9	43.9
3. Medical Dietetics	47.2	12.9	32.3	31.0	35.4	27.1	23.3	38.3
4. Medical Illustration	44.5	8.6	21.5	20.5	20.5	23.4	36.4	31.7
5. Medical Record Administration	74.3	7.7	19.3	26.4	27.9	37.0	21.1	29.9
6. Medical Technology	47.8	19.1	47.8	45.4	35.9	28.0	37.0	47.7
7. Occupational Therapy	54.8	9.4	23.5	32.9	32.9	30.6	13.4	46.9
8. Physical Therapy	47.9	11.8	29.5	30.4	28.7	26.6	28.2	50.0
9. Radiologic Technology	45.3	18.3	45.8	32.1	28.3	24.7	37.1	49.2
10. Respiratory Technology	47.2	15.0	37.5	30.2	37.8	26.6	50.0	38.9
Average	52.6	12.9	32.3	31.4	33.3	31.2	30.0	41.9

Appendix F. Clinical Questionnaire

1. Procedure
2. Summary of Sites and Responses
3. Pre Questionnaire Letter
4. Questionnaire Cover Letter
5. Questionnaire
6. Response Incentive Note
7. Follow Up Letter and Card
8. Thank You and Summary Analysis Letter
    a. Cost Analysis Results
    b. Clinical Preceptors Attitudes

CLINICAL DATA COLLECTION PROCEDURE

- I. Detailed Identification of Courses with a Clinical Component
  - A. Identification of Student Clinical Activity by course per program
  - B. Identification of Faculty Clinical Activity by course per program
    - 1. SAMP faculty activities off-site
    - 2. Off-site clinical personnel engaged in clinical instruction

- II. Identification of Clinical Facilities Utilized
  - A. Identification of clinical sites
    - 1. Location
      - a. Local
      - b. In-state
      - c. Out-of-state by geographic region
    - 2. Type of facility
      - a. General hospital
      - b. Veterans Administration hospitals
      - c. Pediatric hospitals
      - d. Rehabilitation facilities
      - e. Psychiatric facilities
      - f. Other health care facilities
  - B. Identification of clinical preceptors
  - C. Selection of clinical facilities for on-site interviews and visits
    - 1. By type
    - 2. By location
    - 3. By division utilization

- III. Development of Clinical Preceptor Interview Instrument and Questionnaire
  - A. First draft of instrument
  - B. Identification of SAMP faculty clinical co-ordinators
  - C. Interviews: Key SAMP faculty
    - 1. First pre-test
    - 2. Evaluation and review of instrument
  - D. Interviews: Key clinical preceptors in Columbus area
    - 1. Second pre-test
    - 2. Evaluation and review of instrument
  - E. Interviews: Selected clinical preceptors across the nation
    - 1. Interviews scheduled
    - 2. Travel arranged
    - 3. Sample questionnaire and letter of introduction
    - 4. Interview conducted by team member face-to-face
    - 5. Tour of facility
    - 6. Thank you letter sent
    - 7. Evaluation and review of instrument by cost study team members

F. Development of final self-administered clinical questionnaire

IV. Clinical Course Data Collection: Self-Administered Questionnaire
   A. First mailing: Introduction letter
   B. Second mailing
      1. Cover letter
      2. Incentive to respond
      3. Questionnaire
   C. Follow-up
      1. Letter
      2. Return card

V. Disbribution of Attitude Section Results to Clinical Preceptors
   A. Letter
   B. Frequency Counts on Attitude Section for pertinent division

Appendix F

OSU:SAMP: Cost Study: Program Cost Analysis: Clinical Preceptors

Distribution by State

State	Medical Record Admin.	Occupational Therapy	Physical Therapy	Total #	%
Ohio: Columbus	10	9	15	34	23%
Other Cities	14	15	22	51	34%
Total	24	24	37	85	57%
Other States					
Alaska		1		1	
Arkansas		1		1	
Arizona	1			1	
California	3	3	2	8	
Colorado		1		1	
Connecticut	1	2	1	4	
Delaware		1	1	2	
Florida		1		1	
Georgia		2		2	
Hawaii		2		2	
Illinois		4	3	7	
Indiana		2		2	
Kansas		1		1	
Maryland			1	1	
Massachusetts		3		3	
Michigan		6	2	8	
Minnesota		1		1	
Missouri			1	1	
New Jersey			1	1	
New York	1		1	2	
Oklahoma		1		1	
Oregon			3	3	
Pennsylvania		1	2	3	
Washington		1		1	
Wisconsin		4	1	5	
District of Columbia			2	2	
Total				65	43%
Grand TOTAL	30	62	58	150	100%

Appendix F

OSU:SAMP: Cost Study: Program Cost Analysis: Clinical Preceptors

Clinical Preceptors:		Medical Record Admin.	Occupational Therapy	Physical Therapy	Total
Population	#	30	62	58	150
Interviews: On Site	#	1	4	2	7
Questionaire: Recipients	#	29	58	56	143
Respondents	#	21	47	48	116
	%	72%	81%	86%	81%
Usable Forms	#	21	45	46	112
	%	100%	96%	96%	97%
Population					
Usable Data	#	22	49	48	119
	%	73%	79%	83%	79%

THE OHIO STATE UNIVERSITY

July 2, 1976

The O.S.U. School of Allied Medical Professions has undertaken a cost determination study entitled: "Cost Analysis of Ten Allied Health Professions." We are gathering cost data on our baccalaureate level programs in Circulation Technology, Medical Communications, Medical Dietetics, Medical Illustration, Medical Record Administration, Medical Technology, Occupational Therapy, Physical Therapy, Radiologic Technology, and Respiratory Technology.

We are writing to request your assistance. Questionnaires are being sent to the clinical preceptors who accepted students during the 1974-75 school year. As a clinical preceptor for our school during that year, your feedback on the clinical education phase of undergraduate education is more than important -- it is vital to the successful, accurate completion of this needed research.

Determining the costs of educating allied health professionals is an intricate problem. Neither the Association of American Medical Colleges (1973) nor the Institute of Medicine study (1974) included the allied health areas. Owing to the complexity of the educational process of allied health professionals and to the diverse structures of the educational programs themselves, little is known concerning these costs. An exhaustive search of related literature shows a scarcity of useful information,

Accurate information on the costs of allied health education becomes increasingly more important as educational costs continue to escalate. Therefore, the data that you furnish us, combined with the curriculum and operating data gathered from our school, could be utilized by facilities such as yours, schools of allied health, public and private institutions, boards of governors and trustees, as well as the Federal Government for rational planning and development.

Ohio State University School of Allied Medical Professions students complete clinical educational experiences at more than 100 facilities across the country. To determine personnel costs and time contributions related to the education of these students, we are sending out questionnaires next week to all clinical preceptors who accepted O.S.U. students during the 1974-75 school year, (June 1, 1974 -- June 30, 1975.)

Office of the Director School of Allied Medical Professions College of Medicine 1583 Perry Street Columbus, Ohio 43210

The clinical coordinators for our ten divisions have furnished the study team with a list of clinical facilities and preceptors and, in most cases, the names and dates that the School of Allied Medical Professions students attended these clinical sites. More than 200 clinical preceptor questionnaires will be mailed. The information we obtain from these questionnaires will be aggregated: i.e., no individual data received from preceptors or institutions will be discernable in the final published report. Additionally, INDIVIDUAL DATA we receive from you WILL NOT be made available nor discussed with clinical coordinators or other faculty members here at the School of Allied Medical Professions. All members of the study team are administrative personnel and do not have direct affiliations with any of the ten divisions under study.

The questionnaire in general focuses on the costs and benefits to your facility/department for its participation in a clinical education program. Questions deal primarily with the time contributions of you and your department's staff to the activities of the clinical student.

I would like to remind you that your response to this questionnaire is very important. You are not part of a large mass mailing effort nor part of a random sample. If you have any questions relating to the study in general or to the questionnaire, please don't hesitate to phone us collect at: (614) 422-8644. If you should fail to receive a questionnaire within the next two weeks please let us know so we can correct this error.

We are looking forward to your prompt response.

Sincerely,

Ronald L. Harper, Ph.D.
Associate Director and Principle Investigator
School of Allied Medical Professions

P.S. If staff members who had instructional/supervisory responsibility for the students between June 1, 1974 and June 30, 1975 are no longer at your facility, we request that you or another staff member fill out the questionnaire for that individual. If this is not possible, please return the questionnaire to us with the staff member's new address.

RH/jj

THE OHIO STATE UNIVERSITY

The Ohio State University School of Allied Medical Professions' clinical questionnaire is enclosed. We know you've been anxiously awaiting it. Please don't let the number of pages "turn you off" before you begin. It's really not too time-consuming. Here's a brief history of the questionnaire: The first draft of this clinical questionnaire instrument was only two pages long. But after evaluation and discussion with the School of Allied Medical Professions' clinical coordinators and in-person interviews with randomly selected clinical preceptors (in all geographic regions of the country) the questionnaire was revised -- added to, pretested, revised, post-tested, revised, retested, evaluated, torn up, pasted together, revised, consulted upon by experts from everywhere, and WHEW!! Finally, the questionnaire you now have is the 12th draft, final copy, fourteen page superdata collection instrument (printed on easy-on-the eye paper.)

What we're trying to say is that every question on this instrument is important to the study. Some of the questions were suggested by clinical preceptors like yourself. Others were suggested by O.S.U. clinical coordinators, still others by students, and a few by the "study team" and Dr. Harper.

Because this questionnaire is being sent to allied health professionals in ten different disciplines, we had to make several concessions in the terminology and definitions we used. Therefore, if you are having difficulty with a term used or if a question doesn't relate to your profession, please place comments in the margin or write N/A (not applicable) in the response blank provided.

Keep in mind the data we are requesting is for the period of June, 1974 to June, 1975 only. We realize you will probably have to respond to some questions with best estimates. However, if you had a staff member with a high amount of contact with our students and he/she is no longer at your facility, you may feel you cannot adequately reflect this input. We would appreciate receiving the name and address of this person so that we can send them the relevant section of the questionnaire.

The names of clinical preceptors and facilities WILL NOT be used in any published report nor discussed with the School's faculty. We will, however, send you a copy of the data results as they relate to your profession and type of facility.

Office of the Director · School of Allied Medical Professions · College of Medicine · 1583 Perry Street · Columbus Ohio 43210

We realize this questionnaire is not one that can be completed quickly nor without considerable thought. You are the only person who can furnish this needed information. We hope that you will help by completing the questionnaire and mailing it in the addressed, prepaid envelope enclosed. You may now be wondering what ridiculous date we are going to ask you to respond by . . . . . Would you believe, Monday, July 19th? How about Friday, July 23rd? Please, we need to receive your questionnaire no later than Monday, July 26th.

Please feel free to phone us collect (614-422-8644) if you have any questions about the questionnaire or the study in general. Thank you for your cooperation and help.

Sincerely,

The Study Team

Gerry Newhouse

Gerry Newhouse

Jeannette Fraser

Jeannette Fraser

Joan Jennings

Joan Jennings

GN/jj

SCHOOL OF ALLIED MEDICAL PROFESSIONS (SAMP)

College of Medicine
The Ohio State University

Clinical Supervisor's Questionnaire

COST ANALYSIS OF TEN ALLIED HEALTH PROGRAMS
June 1, 1974 -- June 30, 1975

Principal Investigator: Ronald L. Harper, Ph.D.
Associate Director
O.S.U. School of Allied Medical Professions
1583 Perry Street
Columbus, Ohio 43201
(614) 422-5618 or 422-8644

Preceptor/Supervisor ______________________________

Facility ______________________________

Street Address ______________________________

City, State, Zip Code ______________________________

Phone Number (Area Code) ______________________________

Student's Division ______________________________

Course Number ______________ Credit Hours ______________

Dates of Affiliation(s) ______________________________

Student(s) ______________________________

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F.5.1

CLINICAL QUESTIONNAIRE 1/14

INSTRUCTIONS

Please read each question carefully. Questions refer only to activities as they relate to instructing students from Ohio State University's School of Allied Medical Professions (SAMP), between June 1974 and June 1975.

If students from other allied health schools also participated in your facility's clinical education program, PLEASE BE CERTAIN THAT THE FIGURES PROVIDED BY YOU IN THIS QUESTIONNAIRE RELATE ONLY TO YOUR ACTIVITIES WITH OHIO STATE STUDENTS.

If any questions seem unclear or not entirely applicable to your own experiences as a clinical supervisor, we encourage you to ADD EXPLANATORY COMMENTS *in the margins or on the last page of the questionnaire.*

1. At any time during the clinical education program in 1974-75, did you have teaching/supervisory responsibility for the Ohio State School of Allied Medical Professions students assigned to your facility?

____ yes
____ no (If no, please refer the questionnaire to the relevant staff member.)

2. Did you have primary coordinating responsibility for the students from Ohio State throughout their clinical experience? (i.e., Were you the main contact for the School of Allied Medical Professions (SAMP) at your facility?)

____ yes
____ no (If no, please indicate name and title of primary coordinator: ______________________________
____)

The next series of questions is designed to describe the structure of the clinical education program as provided by your facility in 1974-75.

3a. During the period June 1974 -- June 1975, how many Ohio State University School of Allied Medical Professions students were assigned to your department?

____ number of OSU SAMP students

3b. During that period, how many groups of Ohio State students participated in your department's clinical education program?

____ number of GROUPS of Ohio State students

c. How many weeks were each group of Ohio State students at your facility?

____ number of weeks at facility for Group #1
____ number of weeks at facility for Group #2
____ number of weeks at facility for Group #3

d. How many hours per week were the student(s) required to spend at your facility?

____ hours per week

4a. Were students from OTHER allied health schools participating in the clinical education program in your department during the same period of time that Ohio State students were present?

____ yes
____ no (If no, skip to question 5a.)

b. How many students from OTHER allied health schools were in your department during the same period of time as Ohio State students?

____ number of students from OTHER ALLIED HEALTH SCHOOLS

5a. Did the student(s) work in a situation which was an on-going activity at your facility or did she/he work on a special project?

____ on-going facility activity (Skip to question 6a.)
____ special project
____ combination of both

b. Would the special project have been undertaken if clinical students had not been available to your facility?

____ yes
____ no

6a. What percentage of the total time did the student spend in each of the following activities while at your facility?

____ Lecture/Discussion (formal instruction)
____ Supervision (student working relatively independently)
____ Observing demonstrations
____ Other activities ____________________
(please specify)
____

b. From our discussions with clinical program supervisors, it is apparent that many programs include a unique set of experiences for the student while at the facility. Please briefly describe any unique or unusual requirements or experiences provided by your department during 1974-75. Additionally, include any other information that may be relevant in accurately reflecting the structure of the clinical education program.

(if additional space is necessary, please use back of this page)

c. How many allied health professionals does your department employ?

____ number of allied health professionals

Questions 7 through 12 request information concerning the time contribution of you and other staff members to the clinical education of Ohio State students. Note that in these questions it is YOUR TIME as well as other STAFF TIME that is being requested, not student activity time.

7. On the average, how many hours per week were YOU PERSONALLY RESPONSIBLE for OSU student instruction or supervision? (Include only those hours when the student relied upon you to furnish instructional information, to solve specific problems, and to act as primary supervisor.)

____ hours per week of personal responsibility

CLINICAL QUESTIONNAIRE 4/14

One of the recurrent problems in cost assessment of allied health education in a facility that provides patient care is the joint production of educational activities and patient care. For the purposes of our study it is necessary to distinguish between these two activities. The definitions provided below were compiled to aid you in accurately reflecting your time and efforts in providing clinical education to OSU students. PLEASE PAY SPECIAL ATTENTION TO THE DEFINITIONS WHEN ANSWERING QUESTION 8.

TYPES OF INTERACTIONS BETWEEN STUDENTS AND PRECEPTORS

INSTRUCTION:	Instruction occurs in both formal and informal situations where you present information to the student in a systematic fashion.
SUPERVISION:	Supervision occurs when the student is working on an activity where the information required for the performance of that activity has already been provided, AND the student is applying that knowledge without requiring constant, direct interaction with you. You, however, have monitoring responsibility for the student's activities.
DEMONSTRATION:	Students are in a passive role while observing demonstrations. Students may well obtain new information while observing activities, however, the information obtained is dependent upon the student's ability to assimilate information from the demonstrations performed by you.
ASSISTING WITH AN EDUCATIONAL OBJECTIVE:	Students aiding you in the performance of a task where the primary purpose is learning how to execute the task.
ASSISTING IN THE PERFORMANCE OF ASSIGNED ACTIVITIES:	Students aiding you in the performance of a task (which has been learned previously) where the primary purpose is completion of the task as a part of the performance of assigned activities.

Realizing that many activities require the same amount of YOUR TIME regardless of the number of students being instructed, and that the number of students in your department may vary for different time periods, we request that you fill out a separate set of responses in question 8 for EACH GROUP of Ohio State students at your department during 1974-75.

The data requested in question 8 should reflect only YOUR DIRECT CONTACT TIME WITH THE STUDENT(S). Other staff time will be requested in a later question. Question 9 will request your time spent in administration, preparation, and evaluation of OSU students.

8a. For the first group of OSU students:

1. There were ______ OSU students in this group for ______ weeks.
(number) (number)

2. On the average, how many hours per week did you spend with OSU students in each of the following activities? REFER TO DEFINITIONS ON PAGE 4 WHEN ANSWERING THIS QUESTION. (Although activities may overlap between categories, please divide these joint hours between the categories listed. It does not matter that you may have spent unequal amounts of time with each student.)

____ hours per week of INSTRUCTION
____ hours per week that you SUPERVISED the student's activities
____ hours per week of DEMONSTRATION where the demonstration was arranged for the sole purpose of teaching students
____ hours per week of DEMONSTRATION where the activity would have been performed with or without students present
____ hours per week of the student ASSISTING you in a procedure WITH AN EDUCATIONAL OBJECTIVE
____ hours per week of the student ASSISTING you IN THE PERFORMANCE OF ASSIGNED ACTIVITIES

b. For the second group of OSU students:

1. There were ______ OSU students in this group for ______ weeks.
(number) (number)

2. On the average, how many hours per week did you spend with OSU students in each of the following activities? REFER TO DEFINITIONS ON PAGE 4 WHEN ANSWERING THIS QUESTION.

____ hours per week of INSTRUCTION
____ hours per week that you SUPERVISED the student's activities
____ hours per week of DEMONSTRATION where the demonstration was arranged for the sole purpose of teaching students
____ hours per week of DEMONSTRATION where the activity would have been performed with or without students present
____ hours per week of the student ASSISTING you in a procedure WITH AN EDUCATIONAL OBJECTIVE
____ hours per week of the student ASSISTING you IN THE PERFORMANCE OF ASSIGNED ACTIVITIES

9. Approximately how many total hours in 1974-75 did you spend in each of the following activities while participating in the clinical education program for students from OSU's School of Allied Medical Professions (SAMP)?

____ PLANNING AND PREPARING for instruction and supervision
____ ADMINISTRATIVE DUTIES (such as establishing the clinical education program, communications with SAMP division coordinators, etc.)
____ CURRICULUM DEVELOPMENT in collaboration with the OSU academic faculty
____ EVALUATION of student FOR OSU COURSE REQUIREMENTS (include only those hours not included in question 8.)
____ EVALUATION of student FOR PROFESSIONAL CERTIFICATION, where applicable (include only those hours not included in question 8.)
____ OTHER ACTIVITIES with OSU students not included in question 8.

____
(please specify)

For determination of total instructional costs it is necessary to obtain the salary ranges for yourself and all other teaching and supervisory personnel involved with OSU students. Great care will be taken to insure the confidentiality of this information.

10a. Please check the appropriate salary range that includes the salary paid to you by your facility in 1974-75. (DO NOT INCLUDE income from other secondary sources such as private practice not associated with this facility.)

____ under $7,000
____ $7,001 - 9,000
____ $9,001 - 11,000
____ $11,001 - 13,000
____ $13,001 - 15,000
____ $15,001 - 17,000
____ $17,001 - 19,000
____ $19,001 - 21,000
____ $21,001 - 25,000
____ $25,001 - 30,000
____ $30,001 - 40,000
____ over $40,000

________ I do not wish to respond to this question.

b. On how many months is the above salary based?

____ months per year

c. On the average, how many hours per week do you work at this facility?

____ hours per week

CLINICAL QUESTIONNAIRE 7/14

To determine total costs, it is necessary to obtain data about other staff members who contributed their time to the instruction and supervision of Ohio State students during 1974-75. The information requested in questions 11 and 12 can either be provided by you or, if you wish, you may pass the questionnaire to the relevant staff members.

11a. Did anyone other than yourself have teaching or supervisory contact with Ohio State students during 1974-75? (Include others who instructed students on a regular weekly basis.)

____ yes
____ no (If no, skip to question 13.)

b. Please list by NAME and OCCUPATIONAL TITLE other staff members who had teaching or supervisory responsibility. For each group of Ohio State students indicate: (1) the average number of hours per week for each of the activities listed below, (2) the number of weeks of these activities, and (3) the number of OSU students in each group. PLEASE REFER ONCE AGAIN TO THE DEFINITIONS ON PAGE 4 WHEN RESPONDING TO THIS QUESTION.

#1 ____
Name/Occupational title (i.e., physical therapist, OTR, radiologist)

Group #1	Group #2	
______	______	hours per week of INSTRUCTION
______	______	hours per week of DEMONSTRATION where the demonstration was arranged for the sole purpose of teaching students
______	______	hours per week of the student ASSISTING you in a procedure WITH AN EDUCATIONAL OBJECTIVE
______	______	hours per week of OTHER ACTIVITIES (i.e., Supervision, assisting and demonstration without educational purpose, etc.)
______	______	NUMBER OF WEEKS of instruction/supervision
______	______	NUMBER OF OSU STUDENTS in group

#2 ____
Name/Occupational title

Group #1	Group #2	
______	______	hours per week of INSTRUCTION
______	______	hours per week of DEMONSTRATION where the demonstration was arranged for the sole purpose of teaching students
______	______	hours per week of the student ASSISTING you in a procedure WITH AN EDUCATIONAL OBJECTIVE
______	______	hours per week of OTHER ACTIVITIES (i.e., Supervision, assisting and demonstration without educational purpose, etc.)
______	______	NUMBER OF WEEKS of instruction/supervision
______	______	NUMBER OF OSU STUDENTS in group

CLINICAL QUESTIONNAIRE 8/14

#3 ______________________________
Name/Occupational title

Group #1	Group #2	
______	______	hours per week of INSTRUCTION
______	______	hours per week of DEMONSTRATION where the demonstration was arranged for the sole purpose of teaching students
______	______	hours per week of the student ASSISTING you in a procedure WITH AN EDUCATIONAL OBJECTIVE
______	______	hours per week of OTHER ACTIVITIES (i.e., Supervision, assisting and demonstration without educational purpose, etc.)
______	______	NUMBER OF WEEKS of instruction/supervision
______	______	NUMBER OF OSU STUDENTS in group

#4 ______________________________
Name/Occupational title

Group #1	Group #2	
______	______	hours per week of INSTRUCTION
______	______	hours per week of DEMONSTRATION where the demonstration was arranged for the sole purpose of teaching students
______	______	hours per week of the student ASSISTING you in a procedure WITH AN EDUCATIONAL OBJECTIVE
______	______	hours per week of OTHER ACTIVITIES (i.e., Supervision, assisting and demonstration without educational purpose, etc.)
______	______	NUMBER OF WEEKS of instruction/supervision
______	______	NUMBER OF OSU STUDENTS in group

#5 ______________________________
Name/Occupational title

Group #1	Group #2	
______	______	hours per week of INSTRUCTION
______	______	hours per week of DEMONSTRATION where the demonstration was arranged for the sole purpose of teaching students
______	______	hours per week of the student ASSISTING you in a procedure WITH AN EDUCATIONAL OBJECTIVE
______	______	hours per week of OTHER ACTIVITIES (i.e., Supervision, assisting and demonstration without educational purpose, etc.)
______	______	NUMBER OF WEEKS of instruction/supervision
______	______	NUMBER OF OSU STUDENTS in group

11c. For each of the staff members listed in question 11b., please indicate your best estimate of the TOTAL NUMBER OF HOURS IN 1974-75 that each staff member spent in the following activities for OSU students.

INSTRUCTORS					
#1	#2	#3	#4	#5	
____	____	____	____	____	PLANNING AND PREPARING for instruction and supervision
____	____	____	____	____	EVALUATION of student FOR OSU COURSE REQUIREMENTS (include only those hours not included in question 11b.)
____	____	____	____	____	EVALUATION of student FOR PROFESSIONAL CERTIFICATION, where applicable (include only those hours not included in question 11b.)
____	____	____	____	____	ADMINISTRATIVE DUTIES (i.e., coordinating activities with preceptor, scheduling, etc.)
____	____	____	____	____	OTHER ACTIVITIES with OSU students (not included in question 11b.) ______________________ (please specify)

12. Below are salary ranges. For each instructor/supervisor listed in question 11b., please estimate their salary from your institution in 1974-75 on a yearly, 40 hours per week basis. Place the number designating each instructor listed in 11b. in the appropriate salary range. (For example, if the first supervisor listed in 11b. earned $11,500 per year, enter the #1 in the range $11,001 - 13,000.)

_____ under $7,000
_____ $7,001 - 9,000
_____ $9,001 - 11,000
_____ $11,001 - 13,000
_____ $13,001 - 15,000
_____ $15,001 - 17,000
_____ $17,001 - 19,000
_____ $19,001 - 21,000
_____ $21,001 - 25,000
_____ $25,001 - 30,000
_____ $30,001 - 40,000
_____ over $40,000

_____ I do not wish to respond to this question.

The remainder of the questionnaire deals with a wide variety of concerns relevant to assessing the relationship between the costs and the benefits of participating in a clinical education program.

13a. Did the student receive any remuneration from your institution for his/her participation in the clinical program?

____ yes
____ no (If no, skip to question 14.)

b. What kind of remuneration was given? Please estimate total dollar value.

____ stipend of $________ per ________
____ room, estimated total value $________
____ board, estimated total value $________
____ other ______________________________
(please specify) ($ value)

While we realize that many of the national professional organizations have policy directives opposing the use of clinical students to supplement workloads of professionals, it is entirely possible that a student does take over some workload in the performance of legitimate educational activities. Questions 14 through 16 ARE NOT INTENDED to reflect upon your department's compliance with these directives but rather attempts to address some important cost-benefit concerns.

14a. Do students from OSU contribute to the completion of the daily workload in your department?

____ yes
____ no (If no, skip to question 17.)

b. On the average, what percentage of your department's daily workload does ONE clinical student contribute?

____ % of average daily workload

c. If students contribute to the workload, the staff may have some time made free by the students in the department. What percentage of the "freed" staff time is spent in each of the following activities?

____ student instruction/preparation/evaluation
____ staff handles more of the workload (i.e., sees more patients, etc.)
____ research
____ professional development
____ OTHER ______________________________
(please specify)

15a. Had OSU students not been at your facility, would it be necessary to hire additional employees to handle the work done by students?

____ yes
____ no (If no, skip to question 16.)

b. How many additional employees would it require?

____ number of employees at 40 hours per week (full-time)
____ number of employees at 20 hours per week (part-time)

c. What would be the approximate starting salary for this (these) employee(s)?

$__________ per year (for full-time employees)
$__________ per year (for part-time employees)

16a. Had OSU students not been at your facility, would it be possible to reduce the number of employees?

____ yes
____ no (If no, skip to question 17.)

b. How many employees could be released?

____ number of employees at 40 hours per week
____ number of employees at 20 hours per week

17. How many former OSU students has your department hired in the past five years? (i.e., students who were at your facility for clinical education)

____ number of former students hired

The responses listed below are to be used in answering questions 18 through 52. Please circle the response that best indicates YOUR OPINION *about each of the following statements. Please also note that* RESPONSE CATEGORIES CHANGE ORDER.

SA -- Strongly agree
A -- Agree
N -- Neutral, Mixed feelings
D -- Disagree
SD -- Strongly disagree
NA -- Don't know, Not applicable
(i.e., no patient care provided)

SA A N D SD NA 18. Having a clinical education program increases the quality of patient care.

SA A N D SD NA 19. The total productivity of an instructor-student team is lower than the productivity of an instructor working alone.

SA A N D SD NA 20. Sometimes when patients know that a clinical student is treating them, they express resentment for not having a professional providing care.

SA A N D SD NA 21. Having a clinical education program enhances the patients' perception of the quality of this facility/department.

CLINICAL QUESTIONNAIRE 12/14

SA -- Strongly agree
A -- Agree
N -- Neutral, Mixed feelings
D -- Disagree
SD -- Strongly disagree
NA -- Don't know, Not applicable
(i.e., no patient care provided)

NA SD D N A SA 22. Students use more materials in performing duties than do new employees.

NA SD D N A SA 23. My department's participation in a clinical education program increases the cost of patient care.

NA SD D N A SA 24. Clinical education provides a useful way of recruiting new personnel.

NA SD D N A SA 25. Once a student is sufficiently oriented to my department, he/she is able to perform with little or no direct supervision.

SA A N D SD NA 26. When students are at this facility my total workload is heavier.

SA A N D SD NA 27. A clinical education program adds status to my department.

SA A N D SD NA 28. Personally, I prefer to work at a facility that has a clinical education program.

SA A N D SD NA 29. When students are in my department, I have more time to spend in activities other than patient care and instruction.

NA SD D N A SA 30. Having students in this department crowds the physical space.

NA SD D N A SA 31. Good communication channels exist between my department and the OSU clinical coordinator.

NA SD D N A SA 32. Students who have interned at this facility are more likely to be hired as staff members than are other applicants.

NA SD D N A SA 33. By adding status to the department through the clinical education program, the department is able to attract a higher caliber of personnel.

CLINICAL QUESTIONNAIRE 13/14

SA -- Strongly agree
A -- Agree
N -- Neutral, Mixed feelings
D -- Disagree
SD -- Strongly disagree
NA -- Don't know, Not applicable
(i.e., no patient care provided)

SA A N D SD NA 34. Students use a lot of materials which do not contribute to the facility's output.

SA A N D SD NA 35. Having a clinical education program requires better management of staff time.

SA A N D SD NA 36. My workload taken over by students does not compensate for my added workload from teaching/supervising.

SA A N D SD NA 37. The student brings expertise which does not presently exist in this department.

NA SD D N A SA 38. The School of Allied Medical Professions faculty keeps me informed about curriculum changes in the OSU program (both didactic and clinical).

NA SD D N A SA 39. Students should be given compensation for work performed while at this facility.

NA SD D N A SA 40. It takes more time to orient a student to the department's activities than it does to orient a new staff member.

NA SD D N A SA 41. When patients know that a student is providing treatment, they are more likely to object to the quality of care provided.

SA A N D SD NA 42. Having students in my department keeps me current with developments in my profession.

SA A N D SD NA 43. The average OSU clinical student comes to this department adequately prepared to perform professional duties.

SA A N D SD NA 44. Congestion caused by students in the department reduces staff productivity.

SA A N D SD NA 45. The OSU School of Allied Medical Professions faculty regularly updates clinical program objectives for OSU students at my facility.

NA SD D N A SA 46. Clinical students perform the same types of tasks as do regular staff members.

NA SD D N A SA 47. My facility should be compensated by the allied health schools for my time spent with their students.

NA SD D N A SA 48. Evaluating clinical students takes as much of my time as does instruction.

NA SD D N A SA 49. When students are in my department, there is a need for more equipment.

SA A N D SD NA 50. Professionals in my department with less formal education than students express some resentment toward students.

SA A N D SD NA 51. Clinical students bring new ideas and/or information to my department.

SD D D D SD SD 52. Researchers who send out questionnaires like this should be tarred and feathered.

53. There is an underlying assumption that the benefits to the clinical facility for participating in a clinical education program are equal to or greater than the costs incurred by the facility and its staff members. In your opinion, do the benefits to your facility outweigh the costs of participating? Remember, costs and benefits can be both monetary and non-monetary. (If you care to elaborate on this response, please feel free to comment on the back of this page or on a separate piece of paper.)

____ yes, benefits outweigh costs
____ benefits equal costs
____ no, costs outweigh benefits

54. Please examine the cover page. Make corrections and complete any missing information.

*** IF YOU HAVE ANY ADDITIONAL COMMENTS ABOUT YOUR RESPONSES OR ABOUT THE QUESTIONNAIRE, PLEASE FEEL FREE TO WRITE COMMENTS ON THE BACK OF THIS PAGE. ***

Please check through the questionnaire one final time and make certain that you have not omitted any information. Place the completed questionnaire in the prepaid addressed envelope provided and return to us.

Thank you. Your time and efforts are greatly appreciated. We will send you a summary of the results as they relate to your profession.

MANY RESEARCHERS MAKE A PRACTICE OF ENCLOSING MONEY WITH THEIR QUESTIONNAIRES HOPING THAT THIS GESTURE WILL STIMULATE A BETTER RESPONSE. YOUR PROMPT RESPONSE IS VITAL TO OUR STUDY, THEREFORE WE HAVE DECIDED TO SEND YOU SOMETHING MORE SCARCE THAN MONEY, MORE VALUABLE PER OUNCE THAN GOLD, AND MANY TIMES MORE UNIQUE THAN WHITE BREAD. A REMARKABLE ROOT USED FOR MORE THAN 2,000 YEARS IN ORIENTAL MEDICINE AS A TONIC, REJUVENATOR, UNIVERSAL PANACEA, AN APHRODISIAC---KOREAN GINSENG TEA---INSTANT, NO LESS!!

"The name means 'man-shaped root,' for ginseng root sometimes resembles a human body, a shape that in Chinese medicine denoted its use for all organs of the body. From its reputation as a panacea--still current in southeast Asia--comes its name PANAX GINSENG. *The Chinese have regarded ginseng as an elixir of youth, with long use reputedly preventing wrinkles, for instance, and allowing elderly men to sire children.*

"One of the world's leading experts on plant drugs is E.J. Shellard, Professor of Pharmacognosy at London University. 'Ginseng,' he says, 'is an old, much maligned drug that is being reexamined. . .it has anti-infective and anti-fatigue properties and there is accumulating evidence of its antistress activity. In many persons--but not all--it delays mental and physical fatigue.' Ginseng's active substance he believes to be certain glycosides not found to date in any other plants and mainly responsible both for the stimulant effect and for an increase of the body's resistance to infection."

(The former is reprinted from an article in Smithsonian, February 1976, entitled: "Ginseng, Folklore Cure-All, is Being Regarded Seriously," by John Stewart Massey.)

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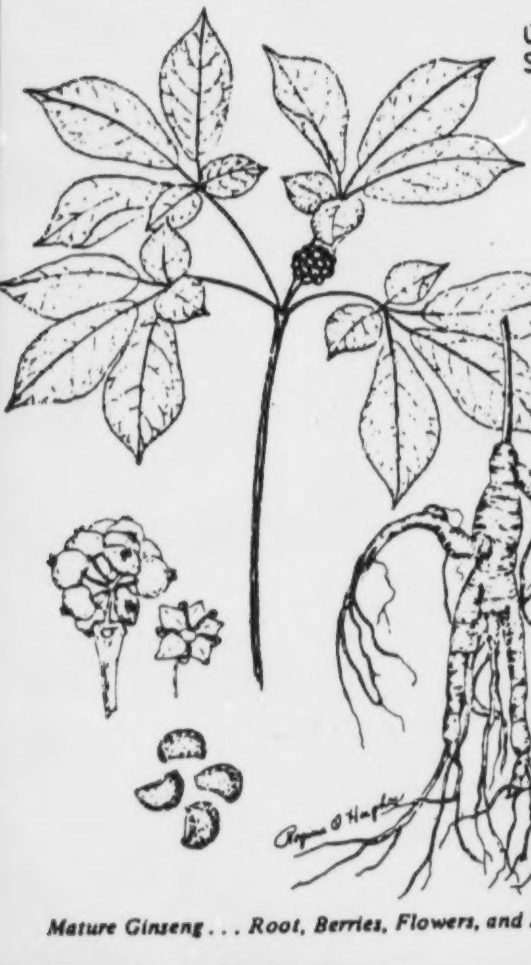

Mature Ginseng . . . Root, Berries, Flowers, and Seeds

KOREAN GINSENG
高麗人蔘茶
大韓民國政府專賣廳檢査品

P.S. ANALYSIS OF THIS TEA SHOWS IT HAS A FAIRLY HIGH PERCENTAGE OF DEXTROSE. THOSE WHO MUST LIMIT THEIR INTAKE OF SUGAR SHOULD BE CAUTIONED.

MANY RESEARCHERS MAKE A PRACTICE OF ENCLOSING MONEY WITH THEIR QUESTIONNAIRES HOPING THAT THIS GESTURE WILL STIMULATE A BETTER RESPONSE. YOUR PROMPT RESPONSE IS VITAL TO OUR STUDY, THEREFORE WE HAVE DECIDED TO SEND YOU SOMETHING MORE SCARCE THAN MONEY, MORE VALUABLE PER OUNCE THAN GOLD, AND MANY TIMES MORE UNIQUE THAN WHITE BREAD. A REMARKABLE ROOT USED FOR MORE THAN 2,000 YEARS IN ORIENTAL MEDICINE AS A TONIC, REJUVENATOR, UNIVERSAL PANACEA, AN APHRODISIAC---KOREAN GINSENG TEA---INSTANT, NO LESS!!

"The name means 'man-shaped root,' for ginseng root sometimes resembles a human body, a shape that in Chinese medicine denoted its use for all organs of the body. From its reputation as a panacea--still current in southeast Asia--comes its name PANAX GINSENG. *The Chinese have regarded ginseng as an elixir of youth, with long use reputedly preventing wrinkles, for instance, and allowing elderly men to sire children.*

"One of the world's leading experts on plant drugs is E.J. Shellard, Professor of Pharmacognosy at London University. 'Ginseng,' he says, 'is an old, much maligned drug that is being reexamined. . .it has anti-infective and anti-fatigue properties and there is accumulating evidence of its antistress activity. In many persons--but not all--it delays mental and physical fatigue.' Ginseng's active substance he believes to be certain glycosides not found to date in any other plants and mainly responsible both for the stimulant effect and for an increase of the body's resistance to infection."

(The former is reprinted from an article in Smithsonian, February 1976, entitled: "Ginseng, Folklore Cure-All, is Being Regarded Seriously," by John Stewart Massey.)

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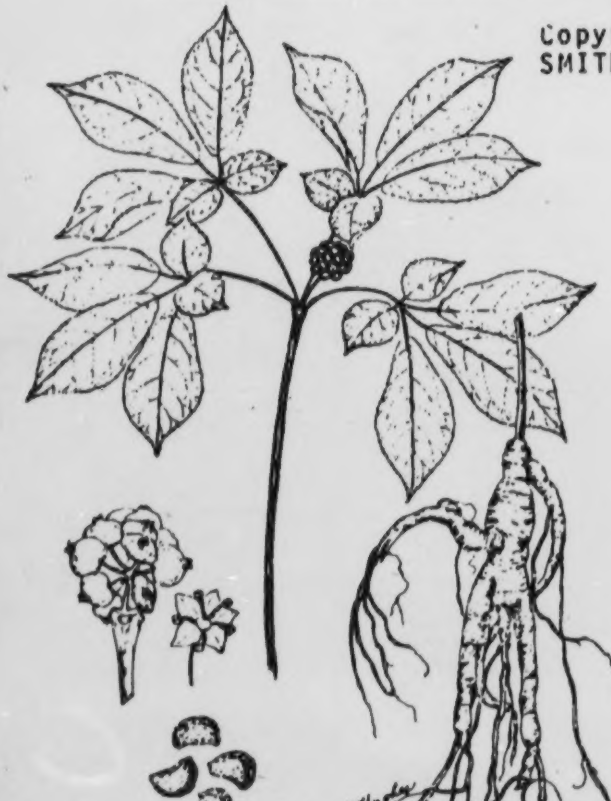
THANKS AGAIN !!!

P.S. ANALYSIS OF THIS TEA SHOWS IT HAS A FAIRLY HIGH PERCENTAGE OF DEXTROSE. THOSE WHO MUST LIMIT THEIR INTAKE OF SUGAR SHOULD BE CAUTIONED.



Mature Ginseng . . . Root, Berries, Flowers, and Seeds

Dear

Even before questionnaires are mailed, researchers speculate as to what the response rate for their questionnaire will be. Our study team is equally divided between optimists and pessimists.

The eternal optimists maintain that we will obtain a high return rate because the clinical preceptors will see the value of the questionnaire and the need for the data. Most will forfeit a portion of their free time, if necessary, to fill out the questionnaire. If the preceptor has moved to another facility, the questionnaire will be forwarded to them.

On the other hand, the pessimists contend that the questionnaire is too long; it's summertime and most preceptors are on vacation; some preceptors have moved to other facilities; all preceptors are just plain sick of getting questionnaires, or are too busy to respond.

As yet we have not received your questionnaire for any one of the above reasons or numerous others. We would like to ask that you take a few minutes to respond to this follow-up inquiry. Please fill out and return the enclosed postcard. It has been pre-addressed and postpaid for your convenience.

Although thus far we have not received your response to our questionnaire, we would still like to send you a summary of the cost study results. We are looking forward to receiving your card and/or questionnaire soon. Thank you for your time and cooperation. If we can provide any other information or assistance, please let us know.

Sincerely,

Gerald Newhouse

Gerald Newhouse
Research Assistant

GN/jj

Office of the Director / School of Allied Medical Professions . College of Medicine 1583 Perry Street Columbus, Ohio 43210

Dear Cost Analysis Team:
(Please check the categories that apply.)

___ I have already mailed the questionnaire.

___ I received your questionnaire late, will respond by ______.

___ I did not receive your questionnaire, please send another to the address on the front of this card.

___ Preceptor no longer at facility, questionnaire forwarded.

___ Preceptor no longer at facility, address unknown.

___ My schedule does not afford me the time to respond.

___ I would like to receive a summary of the results.

___ Other ____.
(please specify)

[illegible]

December 23, 1976

Dear Clinical Preceptor,

As the year is coming to an end, so is our research project. Your participation in our study entitled "Cost Analysis of Ten Allied Health Programs" was greatly appreciated. More than eighty percent of the Ohio State University clinical preceptors responded to our questionnaire in addition to 100% participation by the didactic faculty.

We appreciate very much your assistance and cooperation and are enclosing our findings regarding the yearly costs of education in the ten allied health programs at Ohio State University. These costs represent the average cost per student per year for each year of these four year programs. These costs are those associated with all phases of education of allied health professional at Ohio State. Thus, they reflect both the didactic education and clinical educational costs. These composite figures are based on the 1974-75 curricula. They are not intended to reflect what baccalaureate programs should cost, but rather the actual costs of Ohio State Allied Medicine educational programs as they were offered in the 1974-75 fiscal year. These figures are not applicable to other institutions but may be used as guides to the extent that similar relationships exist between cost elements and curricula in other similar institutional settings.

Additionally we are enclosing a tally of the individual responses from professionals in your discipline to the attitude section of the clinical questionnaire.

If you are interested in a more detailed discussion of the data and the methodology used in obtaining these cost figures, the complete report will be available after the first of the year. A copy of the complete report may be obtained at a later date (the exact cost has not been determined at this time).

Thank you once again for your cooperation in this research endeavour. Your participation has contributed greatly to the successful completion of this project.

Sincerely,

Ronald Lee Harper, Ph.D.
Associate Director

RLH/meh
attachments

School of Allied Medical Professions
The Ohio State University

1974-75 Minimum Cost Analysis Results: Cost Per Student Per Year For Ten Baccalaureate Programs

Division	Average Cost
Circulation Technology	$ 4972.
Medical Communications	2907.
Medical Dietetics	4460.
Medical Illustration	9188.
Medical Record Administration	3976.
Medical Technology	4098.
Occupational Therapy	5771.
Physical Therapy	2702.
Radiologic Technology	3771.
Respiratory Technology	3960.

12/22/76

E.8.3

Frequency Distributions: Clinical Preceptor Attitudes

Composite: Medical Records Administration, Occupational Therapy, Physical Therapy

Question Content	Strongly Agree	Agree	Neutral/ Mixed Feelings	Disagree	Strongly Disagree	Missing Data	Total
1. Having a clinical education program increases the quality of patient care.	29	55	15	5	0	12	116
2. The total productivity of an instructor-student team is lower than the productivity of an instructor working alone.	6	23	24	45	15	3	116
3. Sometimes when patients know that a clinical student is treating them, they express resentment for not having a professional providing care.	2	28	16	35	13	22	116
4. Having a clinical education program enhances the patients' perception of the quality of this facility/department.	6	34	40	9	0	27	116
5. Students use more materials in performing duties than do new employees.	0	8	20	68	9	11	116
6. My department's participation in a clinical education program increases the cost of patient care.	4	22	8	54	17	11	116
7. Clinical education provides a useful way of recruiting new personnel.	35	55	13	7	3	3	116
8. Once a student is sufficiently oriented to my department, he/she is able to perform with little or no direct supervision.	6	37	15	38	18	2	116
9. When students are at this facility my total workload is heavier.	17	71	8	17	3	0	116

E.8.4

Question Content	Strongly Agree	Agree	Neutral/ Mixed Feelings	Disagree	Strongly Disagree	Missing Data	Total
10. A clinical education program adds status to my department.	31	71	11	2	0	1	116
11. Personally, I prefer to work at a facility that has a clinical education program.	54	48	10	0	3	1	116
12. When students are in my department, I have more time to spend in activities other than patient care and instruction.	1	18	13	52	24	8	116
13. Having students in this department crowds the physical space.	5	47	6	47	7	4	116
14. Good communication channels exist between my department and the OSU clinical coordinator.	29	69	14	4	0	0	116
15. Students who have interned at this facility are more likely to be hired as staff members than are other applicants.	12	47	31	23	1	2	116
16. By adding status to the department through the clinical education program, the department is able to attract a higher caliber of personnel.	16	45	38	9	1	7	116
17. Students use a lot of materials which do not contribute to the facility's output.	0	10	7	77	13	9	116
18. Having a clinical education program requires better management of staff time.	26	74	9	5	0	2	116
19. My workload taken over by students does not compensate for my added workload from teaching/supervising.	14	54	15	24	2	7	116

Question Content	Strongly Agree	Agree	Neutral Mixed Feelings	Disagree	Strongly Disagree	Missing Data	Tota
20. The student brings expertise which does not presently exist in this department.	0	25	33	45	13	0	116
21. The School of Allied Medical Professions faculty keeps me informed about curriculum changes in the OSU program (both didactic and clinical).	9	72	13	16	0	6	116
22. Students should be given compensation for work performed while at this facility.	2	30	25	39	14	6	116
23. It takes more time to orient a student to the department's activities than it does to orient a new staff member.	1	24	15	61	13	2	116
24. When patients know a student is providing treatment, they are more likely to object to the quality of patient care provided.	0	8	22	59	5	22	116
25. Having students in my department keeps me current with developments in my profession.	28	67	4	15	2	0	116
26. The average OSU clinical student comes to this department adequately prepared to perform professional duties.	9	69	24	12	1	1	116
27. Congestion caused by students in the department reduces staff productivity.	0	5	14	80	15	2	116
28. The OSU School of Allied Medical Professions regularly updates clinical program objectives for OSU students at my facility.	4	65	22	11	0	14	116

Question Content	Strongly Agree	Agree	Neutral/ Mixed Feelings	Disagree	Strongly Disagree	Missing Data	Tota
29. Clinical students perform the same types of tasks as do regular staff members.	10	79	7	14	4	2	116
30. My facility should be compensated by the allied health schools for my time spent with their students.	3	27	45	31	5	5	116
31. Evaluating clinical students takes as much of my time as does instruction.	8	41	11	51	2	3	116
32. When students are in my department, there is a need for more equipment.	1	16	13	77	8	1	116
33. Professionals in my department with less formal education express some resentment toward students.	0	5	6	55	32	18	116
34. Clinical students bring new ideas and/ or information to my department.	25	74	14	2	0	1	116

9.8.2

	Benefits outweigh costs	Benefits equal costs	Costs outweigh benefits
35. Do the benefits to your facility outweigh the costs of participating in a clinical education program?	60	45	6

Appendix G. Other Costs

OSU:SAMP: Actual 1974-75

Appendix G
OSU:SAMP: Cost Study: Primary Department Total Costs 1974-75: Other Cost Analysis

		Percentage of Total Cost Contributed by									
			Other Costs: Direct			Other Costs: Indirect					
	Programs	Faculty Cost Total	Support Personnel	Space	Supplies & Equipment	SAMP Admin.	Med.School Admin.	Central Admin.	Other Cost Total	Total Cost	Other Cost Factor OZ/FZ
1.	Circulation Technology	48.9	6.6	4.6	5.8	10.0	8.7	15.4	51.1	127,543	1.0
2.	Medical Communications	46.6	8.2	4.0	5.2	12.4	10.3	13.3	53.4	102,909	1.2
3.	Medical Dietetics	53.1	9.5	4.6	5.2	3.9	10.6	13.1	46.9	324,546	.9
4.	Medical Illustration	62.2	14.3	4.3	2.3	9.6	3.4	3.9	37.8	133,152	.6
5.	Medical Record Administration	31.0	9.2	6.5	4.1	14.8	18.6	15.8	69.0	86,314	2.2
6.	Medical Technology	27.9	12.5	6.1	16.0	5.0	13.8	18.7	72.1	256,373	2.6
7.	Occupational Therapy	37.8	5.9	10.1	2.7	4.9	25.9	12.7	62.2	261,126	1.7
8.	Physical Therapy	32.4	5.9	10.0	2.2	4.6	25.4	19.5	67.6	278,248	2.1
9.	Radiologic Technology	41.1	7.4	4.0	3.7	11.2	8.4	24.2	58.9	113,729	1.4
10.	Respiratory Technology	43.4	8.4	5.2	3.2	12.8	10.6	16.4	56.6	99,940	1.3
	Total	41.6	8.7	6.5	5.5	7.1	15.2	15.4	58.4	1,783,880	1.4

Appendix H. Steps - Source of Data - Formats

OSU:SAMP: Actual

PROCEDURES FOR PROGRAM COST ANALYSIS
*IDEAL AND ACTUAL

STEPS STEP #	SOURCE OF DATA	FORMAT	PAGE CODE
1. Curriculum Description: Detail Describe the Student Curriculum by Academic Session by Year Identify and Summarize with Teaching Unit Responsibility Credits Instructional Mode Student Contact Hours	1. *IDEAL: School Catalog for Total Program Program Director for Contact Hour Detail ACTUAL: OSU Faculty's Detail Summarized by Mode within Course for Courses Described in Curriculum (Didactic Questionnaire) For Program Department plus Catalog Descriptions	1. Program Curriculum Detailed Summary Student Contact Hours TRU # · Course Title · Credits · Lectures · Laboratory Seminar Recitation · Clinic · TOTAL · Percent of Program Total By Year · By Session Detail With Session & Year TOTALS plus Percent of Total	1: 1 of x
2. Curriculum Description: Summary Summarize Student Curriculum Contact Hours by Teaching Unit Responsibility by Academic Session by Year TRU # 1 = Program Department 2 = Other Departments in School 3 = Other Health Center Schools 4 = Affiliated Clinical Sites 5 = Other Specific 6 = General University 7 = Other General	2. *IDEAL: Step 1 Curriculum Detail ACTUAL: OSU Faculty's Detail Summarized for Courses Provided TRU # 1 = Program Department 2 = SAMP 3 = College of Medicine 4 = Affiliated Clinical Sites 6 = General University	2. Program Curriculum Teaching Responsibility Unit Summary Student Contact Hours TRU # · Course Title · Credits · Lectures · Laboratory Seminar Recitation · Clinic · TOTAL · Percent of Program Total By Teaching Responsibility Unit By Year · By Session Detail With Session & Year & Program Totals Within Teaching Responsibility Unit TOTALS plus Percent of Total (At all levels)	234: 1 of x
3. Student Class Characteristics Describe Student Number by Class with Program Total	3. *IDEAL: Program Director Description ACTUAL: OSU Average of Faculty's Count of Students	3. Student Class Characteristics Number of Students Year 1 = _____ 2 = _____ 3 = _____ 4 = _____ Program Total = _____	234: n of x
4. Faculty-Student Ratios Describe Faculty-Student Ratios by Instructional Mode Calculate Factor for Number of Sections Required for Class Size Faculty-Student Multiplier (FSM)	4. *IDEAL: Program Director Description ACTUAL: OSU Calculated from Step 4 Faculty Contact Hours Provided by Program Department Other Departments by Course Schedule Analysis	4. Instructional Mode Lecture · Laboratory Seminar Recitation · Clinic Number of Students Per Faculty Member · (32) · (16) · (6) Number of Sections Factor (FSM) · (1) · (2) · (4)	

OSU:SAMP:CS:MAG:10/1/76
*IDEAL = THEORETICAL 12/1/76

PROCEDURES FOR PROGRAM COST ANALYSIS
*IDEAL AND ACTUAL

STEP # / STEPS	SOURCE OF DATA	FORMAT	PAGE CODE
4. Faculty Requirements Determine Faculty Contact Hours Required for Student Contact Hours by Instructional Mode by Year by Teaching Responsibility Unit Calculated by Multiplying Student Contact Hours by Number of Sections Factor	4. *IDEAL: STEP 2 Student Contact hours multiplied by STEP 4 Sections Factor (FSM) ACTUAL: OSU Faculty's Detail Summarized by Mode within course for Program Department (Didactic Questionnaire) Other Departments by Factor Calculation	4. Faculty Contact Hours Ideal Requirements and/or Actual Provisions Course Title — Faculty Contact Hours: Lecture, Laboratory Seminar Recitation, Clinic, TOTAL — Percent of Program Total By Teaching Responsibility Unit By Year By Session Detail With Session & Year TOTALS Within Teaching Responsibility Unit TOTALS plus Percent of Total (at all levels)	234:n of x
5. Faculty Organization Determine amount of Faculty Contact to be Provided by Full and Part-time Faculty for each Instructional Mode	5. *IDEAL: Program Director Description for Primary Teaching Unit and Affiliated Clinics Assume Full-Time for Other Units	5. IDEAL: Faculty Organization Teaching Responsibility Unit — Faculty Contact Hours: Lecture, Laboratory Seminar Recitation, Clinic, TOTAL — Percent of Program Total Full-Time Part-Time On or Off Site Total	5-9: 1 of 1
	ACTUAL: OSU STEP 4.5 Faculty's Contact Summarized by Course by Faculty within Type (Didactic Questionnaire)	4.5 ACTUAL OSU Faculty Organization Course Title — Faculty Contact Hours: Full-Time Faculty Member Instructional Mode, Part-Time, TOTAL Summary for Teaching Responsibility Unit #1	4.5: 1 of x
	ACTUAL: OSU STEP 5.5 STEPS 2, 4 and 5 Detail Totals and Percents	5.5 Student and Faculty Contact Hours Summary Analysis Steps 2 and 4 Formats	5.5: 1 of x

OSU:SAMP:CS:MAG:10/1/76
*IDEAL = THEORETICAL 12/1/76

PROCEDURES FOR PROGRAM COST ANALYSIS
*IDEAL AND ACTUAL

STEP #	STEPS	SOURCE OF DATA		FORMAT				PAGE CODE
6.	**Faculty Availability for Contact** Define Faculty Availability to Provide Contact Hours by Teaching Responsibility Unit for Full and Part-Time Faculty	6. *IDEAL: ACTUAL: OSU	Faculty Activity Analysis Description or Assumption Calculated from Steps 4 and 7 Comparison with Faculty Activity Analysis	6. **Faculty Activity Analysis** Teaching Responsibility Unit Full-Time Part-Time On or Off Site	Total Hours Per Year	Direct Contact Percent of Total	Faculty Hours for Direct Contact	5-9: 1 of 1
7.	**Faculty FTE Requirements and/or Provisions** Determine Faculty FTE Requirements Faculty Contact Hours Divided by Faculty Hours for Direct Contact	7. *IDEAL: ACTUAL: OSU	Step 5 Faculty Contact Hours Step 6 Faculty Availability Hours Faculty Counts for Primary Departments: Actual Other Departments: Calculated	7. **Faculty Full-Time Equivalence** Teaching Responsibility Unit Full-Time Part-Time On or Off Site Total With Year and Program Totals			FTE	5-9: 1 of 1
8.	**Faculty Salaries** Determine Average Salaries of Faculty by Type within Teaching Responsibility Unit	8. *IDEAL: ACTUAL:	Program Director National Reports Faculty Salaries Summarized and Averaged by Type within Unit	8. **Faculty Salaries** Teaching Responsibility Unit Full-Time Part-Time On or Off Site Total with Year and Program Totals			$	5-9: 1 of 1

OSU:SAMP:CS:MAG:10/1/76
*IDEAL = THEORETICAL 12/1/76

PROCEDURES FOR PROGRAM COST ANALYSIS
*IDEAL AND ACTUAL

STEP # STEPS	SOURCE OF DATA	FORMAT		PAGE CODE
9. Faculty Cost Determine the Cost of Faculty by Type within Teaching Responsibility Unit Faculty FTE multiplied by Faculty Salaries	9. *IDEAL: Step 7 and Step 8 ACTUAL: Step 7 and Step 8 OSU	9. Faculty Cost Teaching Responsibility Unit Full-Time Part-Time On or Off Site Total With Year and Program Totals	$	5-9: 1 of 1 9-12: 1 of 1
10. Other Cost Determine Other Cost Including Direct: Support Personnel Supplies & Equipment Indirect: Plant Maintenance Administration: School College Central	10. *IDEAL: Assumption based on Relationship of Faculty Cost to Total Cost ACTUAL: Calculated from OSU Financial Reports	10. Other Cost	$	9-12: 1 of 1
11. Total Cost Determine Total Cost by Faculty Type within Teaching Responsibility Unit with Year and Program Totals Sum of All Cost	11. *IDEAL: Step 9 and Step 10 ACTUAL: Step 9 and Step 10 OSU	11. Total Cost	$	9-12: 1 of 1
12. Total "Cost" per Student Determine Cost per Student by Faculty Type within Teaching Responsibility Unit With Year and Program Totals Total Cost divided by Number of Students	12. *IDEAL: Step 11 and Step 3 ACTUAL: Step 11 and Step 3 OSU	12. Total Cost per Student	$	9-12: 1 of 1

OSU:SAMP:CS:MAG: 10/1/76
*IDEAL = THEORETICAL 12/1/76

Appendix I. Step Detail Description

OSU:SAMP: Actual

Step	
1	Curriculum Description: Detail
2	Curriculum Description: Summary
3	Student Class Characteristics
4	Faculty Requirements
4.5	Faculty Contact Hours Summarized by Type for TRU #1
5	Faculty Organization
6	Faculty Availability for Direct Contact
7	Faculty FTE Requirements and/or Provisions
8	Faculty Salaries
9	Faculty Costs
10	Other Costs
11	Total Program Cost
12	Program Cost per Student

STEP 1 CURRICULUM DESCRIPTION: Detail

Step 1 provides a listing of the student's curriculum indicating course number, credit hours, student contact hours, and teaching responsibility unit designation. The curriculum information was obtained from each division for the 1974-75 school year. The accuracy of the curriculums was verified using information obtained from the University's central scheduling office. In all cases but one (Respiratory Technology) the curriculum provided by the division was an actual (and accurate) listing of the courses that the students were required to take when enrolled in the program.

In 1974-75 the Respiratory Technology curriculum was undergoing significant changes. Students were taking courses in a complex pattern, i.e., Juniors were at some points taking courses listed for seniors and seniors were taking some listed for Juniors in what had been the former program. This division had also just undergone changes in the faculty. A meeting with the present division faculty was held to develop a list of all courses necessary for the students to graduate with a baccalaureate degree. Given the listing of courses taught during the 1974-75 school year, a curriculum was reconstructed which reflected a logical (and probable) curriculum that the "typical" student took. The reconstructed curriculum was presented to the Respiratory Technology faculty for approval. This approved curriculum was used in this analysis.

It is important to note that this analysis provides the cost for a curriculum that represents a composite, i.e., a typical program. Many students take courses before they have decided on the career that they wish to pursue. To the extent that a given student takes courses which are not required and cannot be used in their progression to an allied health degree, the costs determined here will underestimate the total cost of educating that student.

Additionally,to the extent that students are unsuccessful in obtaining admission to the Allied Medical program that they wish to enter, courses taken that are relatively specific to the program may not be useful in obtaining their alternative degree. Although the School of Allied Medical Professions does not experience this cost, some instructional unit in the university does. This is an additional external cost that the university may incur incidental to offering allied health education programs.

For each program, Step 1 provides more than a simple listing of the curriculum. It also categorizes the curriculum by 1. teaching responsibility unit, 2. mode of instruction and 3. curriculum year. Each of these will be explained in more detail.

Teaching responsibility unit (TRU) is defined as the department, group of departments or colleges which provide the instruction for a particular course. The grouping of departments was necessary since a different pattern of faculty utilization of time and a general difference in cost structures was anticipated for each of these instructional units.

TRU #1 is defined as the SAMP division which is primarily responsible for the curriculum courses in the program which is being studied. All courses taught by other SAMP faculty outside of the division under study are defined as TRU #2. Courses taught under the designation of Allied Medicine (A.M.) were allocated to TRU #1 and TRU #2 using the following criteria: 1. if the Allied Medicine course was taught primarily (i.e., 90% or more) for students from a single SAMP division and the faculty member was from the same division, the course was allocated to TRU #1 of that division, 2. if the A.M. course enrollment was distributed among several divisions, the A.M. course was allocated to TRU #2 relative to the curriculum of the divisions under study. TRU #3 contains courses taught by the College of Medicine, (including basic sciences such as anatomy and physiology), College of Pharmacy, and any other medical center course taught to the SAMP students. TRU #4 contains instruction taught in the affiliated clinics, many of which are not on the O.S.U. campus. TRU #4 applies only to programs with independent terminal clinical courses (Occupational Therapy, Medical Record Administration, and Physical Therapy). TRU #5 was to contain any other teaching units not included within TRU #1, TRU #2, TRU #3, TRU #4, and TRU #6. When the curriculum analysis was complete no courses were found which could not be listed within the categories (TRU #1 through 4 and TRU #6). Therefore, TRU #5 was not utilized. General university courses, primarily taken during the preprofessional years, were assigned to TRU #6.

Student contact hours (SCH) were defined as those hours per week when a student is in contact with a faculty member for instruction.

These hours are listed by modes of instruction. The modes identified include: lecture, recitation, laboratory, seminar, and clinic. The mode of instruction and its group size are important to costs since the amount of faculty contact required to provide instruction and the other faculty activities related to teaching (e.g., preparation) vary by the mode of instruction.

The data on modes of instruction was obtained from two sources. For TRU #1 and #2, modes of instruction were determined from the didactic questionnaire. For all other teaching units the data was obtained from the master schedule of courses printed each quarter by the university. The data obtained from this source was supplemented by 1. the cost study staff's general knowledge of undergraduate courses and 2. telephone conversations with the appropriate instructors when data provided by the master schedule did not coincide with the general knowledge of the staff or when discrepancies appeared to be present.

A final consideration in obtaining the instructional modes of elective courses should be clarified. Preprofessional electives were all assigned to TRU #6 unless information obtained from the SAMP division dictated otherwise. Lists of preferred electives were obtained whenever possible. In most cases, the elective courses were distributed between lecture courses and lecture and recitation courses. When a curriculum listed a choice between two courses (e.g., English 100 or Sociology 201) the first time the choice was listed the first course was used. The second time it was listed the other was used. In the case where two courses in the same department were listed as alternatives (e.g., Economics 100 or 200) an average of the student contact hours was used. This was especially critical in those divisions where the class size was large enough to warrant the provision of two (or three) sections for recitation courses.

The final type of information provided by reviewing data collected for Step 1 is the distribution of the student curriculum by year. This information allows one to determine the relative load of instruction that the student experiences each quarter as well as each year.

STEP 2 CURRICULUM DESCRIPTION: Summary

Step 2 is a rearrangement of the data provided in Step 1 with the addition of some offered, but not required, courses for TRU #1 and TRU #2. In this step courses are organized in three categories. All courses within a single TRU are listed together. Within each teaching responsibility unit the courses are listed first in order of year and then quarter within that year. Therefore, under each teaching responsibility unit, the courses are listed in chronological order with Freshman, Junior, Autumn quarter courses first and Senior, Spring quarter courses last.

Only in TRU #1 and #2 of Step 2 are there data that are not presented in Step 1. Some courses which are taught are not required of each student. That is, the departments sometimes offer courses that the student can take as an elective. These hours of student contact hours would be reflected in Step 1 only under the title of elective.

Additionally, the faculty on occasion offers more than one section or more than one quarter of a class in order to teach the entire group of students that demand that instruction. Although the courses are listed in Step 2, student contact hours (SCH) are only entered once, since the student will take that course only one time.

The categories of instructional modes of student contact hours have been collapsed in this step due to the insignificant number of hours in some modes. Seminar and other hours have been added into the mode which best reflects the appropriate faculty-student ratio. Recitation, laboratory and clinic remain the same.

It is important for the reader to understand the distinction drawn between courses offered versus those required. The concept of the course that is offered but not required originates from two distinct motivations of the division. First, the division faculty may wish to offer courses which provide information not available in the present curriculum and which is not absolutely necessary for the successful passage of certification, registration or licensure examination. The course content may be the particular expertise or interest of a faculty member, but is not required substantive knowledge for the student. Secondly, the division may decide to offer a course that is required but offer it in more than one quarter or in more than one section. In this case, the student would only take the course once since it is required only once for a given student. Thus, from the perspective of the student, a course may be offered one quarter and he may be required to take it. The course may be offered in a subsequent quarter or section, but for the student who has successfully completed the course, it is no longer required.

The number of student contact hours (SCH) required will always be equal to or be less than the number of student contact hours offered. A single student will never take the offered number of student contact hours unless those additional hours, which reflect the difference between the offered and required courses, are all courses which the student can and does take as an elective.

The concept of offered versus required has a very important meaning for the calculation of faculty contact hours in Step 4. Since, in the program cost analysis, methodology costs are directly related to the faculty contact hours supplied, regardless of the demand for contact hours as defined by the curriculum, the offering of courses beyond the necessary faculty contact hours to deliver the program inflates the program cost per student.

STEP 3: STUDENT CLASS CHARACTERISTICS

The number of students in each program was ascertained from actual data. Professional enrollment for the 1974-75 year was used for Junior and Senior class enrollment and for Sophomore enrollment in three year professional programs. Since students are admitted to the professional years (Sophomore, Junior, and Senior years or Junior and Senior years only depending on the program) it was necessary to estimate the size of the Freshman or Freshman and Sophomore class. Sophomore class size was determined using 1975 program admissions and Freshman enrollment was derived using 1976 fall quarter admissions.

Students who are in certificate programs were also included. Graduate student courses are excluded.

Number of faculty per student for TRU #1 by mode was calculated by multiplying the number of students per class times the required student contact hours per mode and then dividing that by the faculty contact hours offered per mode.

STEP 4: FACULTY-STUDENT RATIOS AND FACULTY REQUIREMENTS

Step 4 provides a course by course listing of the faculty contact hours required to teach the offered student contact hours in each teaching responsibility unit. Faculty contact hours (FCH) were defined as those hours per week when a faculty member is in direct contact with students for instruction. Faculty contact hours listed in this step are derived from three data sources: actual data from the didactic questionnaire, data constructed using a set of assumptions pertaining to the average group size for each instructional mode, and data from the clinical questionnaire.

For TRU #1 and #2 faculty contact hours are actual faculty contact hours provided as indicated on the didactic questionnaire for each course taught during the 1974-75 school year by Allied Medicine faculty. For TRU #3 faculty contact hours were calculated using the following assumptions. First, it was assumed that the average lecture could accommodate 50 students while the average recitation and laboratory section could handle 16 students per faculty member. The group size multiplier was calculated by dividing the size of the division's class by the group size per mode. Therefore, if the program had 25 students in each class, the group size multiplier for lecture would be .50 and for laboratory and recitation 1.56. Multiplying the student contact hours per mode by the group size multiplier will provide the faculty contact hours allocated to the program under study.

Teaching responsibility unit #6, calculation of faculty contact hours, was performed in a similar fashion. In this teaching responsibility unit, however, the average lecture was assumed to accommodate 100 students while the average group size for laboratory and recitation was 25.

The average class size for TRU #3 and #6 was derived partly from theoretical assumptions and partly from data on class size by mode accumulated for a sampling of spring 1975 courses in which allied medicine students were enrolled. While it is unlikely that any single course required the exact number of faculty contact hours derived using these assumptions, it was assumed that over the long run the total number of faculty contact hours listed in this step approaches the actual number of faculty contact hours provided to School of Allied Medicine students.

Faculty contact hours for TRU #4 were calculated using a set of assumptions based on clinical questionnaire data. A brief description of the rationale follows.

While the student is at the clinical site, the student can participate in a number of different activities with the clinical preceptor or supervisor. These activities include instruction, demonstration, supervision and other activities such as attendance at staff meetings. Since the preceptor is engaged in a joint activity, the production of patient care and the education of the student, it would be inappropriate to cost the entire time the preceptor is with the student to education. Using data collected from question 6a of the clinical preceptor questionnaire, the following costing assumptions were used. 1. 100% of instruction and demonstration time was allocated to teaching, 2. 50% of the supervision time was allocated to direct contact and, 3. none of the other activity time was considered educational. Using these assumptions, faculty contact hours required to deliver the clinical education of students was derived, taking into account the occurrence of the joint production of patient care and education. (See Step 14 for a more detailed discussion of the rationale for these clinical costing assumptions).

STEP 4.5: FACULTY CONTACT HOURS SUMMARIZED BY TYPE FOR TRU #1

On the basis of didactic questionnaire data the faculty contact hours for TRU #1 are reorganized in this step. The individual faculty members' contribution of direct contact is identified for each course by instructional mode. Faculty members are identified as either being full-time or part-time. Guest lecturer, clinical personnel, and graduate teaching associate direct contact hours also are presented by mode and course. This step allows the allocation of faculty contact hours into hours delivered by the different types of instructional personnel.

Full-time faculty members are defined as those persons who are expected to provide direct contact, preparation for teaching, administration, research, public service and other activities. The faculty member's time, therefore, is allocated among a number of activities and not simply the provision of educational activities. Division directors are considered to be full-time faculty members.

Part-time faculty members are those individuals who are hired to provide instructional related services only, i.e., direct contact and preparation. Note that full and part-time distinctions are not based on the number of hours per year that the faculty member is employed but rather upon the range of activities that the faculty member is expected to provide.

A guest lecturer is defined as any individual who provides instruction to the class on a one-time basis. These individuals cannot be members of the faculty of the division under study. If they were, their hours would be listed as individual faculty members. Guest lecturers can, however, include SAMP faculty members from other divisions. Non-divisional SAMP faculty member hours are thus included only as guest lecturer hours.

Clinical personnel are defined as those individuals who are located in affiliated hospitals. Clinical hours that are not provided in independent terminal clinics are included in this step; therefore, all divisions except Medical Record Administration, Occupational Therapy, and Physical Therapy, have all of the clinic hours in the primary department TRU.

This step manipulates only those faculty contact hours in TRU #1. Since some SAMP faculty activity falls into TRU #2, the estimation of total direct contact hours provided per faculty member will be underestimated to the extent that the faculty member contributes to the provision of Allied Medicine education under the teaching responsibility unit of TRU #2, i.e., all other Allied Medicine courses.

STEP 5: FACULTY ORGANIZATION

Step 5 organizes the faculty contact hours per mode by teaching responsibility unit. Also, TRU #1 faculty contact hours are organized by the type of personnel delivering the faculty contact hours. The source of the data used in this step is Step 4.5 for TRU #1 and Step 4 for TRU #2 - 6.

For the "actual" OSU analysis a summary page of student and faculty contact hours was prepared and identified as Step 5.5.

STEP 6: FACULTY AVAILABILITY FOR DIRECT CONTACT

Data obtained from the 1974-75 Departmental Faculty Salary Analysis supplied by the Office of Personnel Services show that 77% of the full-time equivalents (FTEs) in the general university hold nine-month appointments and 89% of the Health Center Faculty hold twelve-month appointments. Therefore, for TRU #1, #2, and #3, faculty were assumed to have a yearly total of 1920 hours (48 weeks times 40 hours per week) available for activities while for the general university faculty (TRU #6) 1440 yearly hours (36 weeks times 40 hours per week) were assumed. Clinical personnel in TRU #4 were assumed to hold twelve-month appointments and to have 1920 hours available in the year.

Hours of direct contact per year were calculated for the TRU #1 full-time, part-time and graduate teaching associates using didactic questionnaire data. Assumptions based on data from the Institute of Medicine, the American Association of Medical Colleges and the CMDNJ Faculty Resource Study were used in estimating the hours of direct contact available from faculty members in the other teaching responsibility units. The assumptions for non-primary department personnel are as follows:

TRU #2 and #3:	It is assumed that a fully involved faculty member had 23% of their time (442 hours) available for direct contact.
TRU #1 and #4:	Clinical faculty, clinical preceptors and guest lecturers were assumed to have 100% of their time available for direct contact.

TRU #6: General university faculty are assumed to have more time available for direct contact than TRU #2 - #3; therefore, 30% (or 432 hours) were available per year per FTE for their direct contact.

In TRU #1 the hours of direct contact available per year were calculated using data from Step 5 and Step 7. Step 5 provides us with the actual number of faculty contact hours supplied by faculty type. Step 7 provides actual head counts of full and part-time faculty as well as graduate teaching associates. Therefore, by dividing the number of faculty contact hours supplied (Step 5) by the actual head count of faculty by type (Step 7) the average number of direct contact hours per faculty type was obtained.

STEP 7: FACULTY FTE REQUIREMENTS AND/OR PROVISIONS

In this step the number of faculty members required to deliver the curriculum is presented. Data in this step is given for TRU #1 and calculated for TRU #2 - #6.

In TRU #1 the FTE number is an actual head count of the full-time faculty members employed by the division in 1974-75. The FTE number for part-time does not count bodies but rather reflects the number of full-time equivalents. Therefore, to have one FTE of graduate student teaching associates, two 50% GTAs must be employed.

In the other teaching units the faculty requirements are calculated by dividing the number of faculty contact hours required to deliver the curriculum (as indicated in Step 5) by the hours of direct contact available per year by an FTE in each of the teaching units (Step 6). By way of example, these faculty contact hours may actually be distributed among 30 individual faculty members in a variety of departments in the university but may require only 5 FTEs.

FTE requirements were rounded to the nearest tenth. Any other rounding procedure distorted significantly the faculty cost and, therefore, the total cost per student. Calculations using various rounding options were carried out to fully explore the cost implications of each possible rounding assumption.

STEP 8: FACULTY SALARIES

Average salary figures for TRU #1 are actual averages of the amount of money paid out to the full-time faculty members in the division. In some cases, such as Medical Illustration, the faculty members were paid from other sources (the hospital) for their entire salary; however, regardless of the source, that salary was used in computing the average salary.

Clinical personnel salaries were calculated for those divisions where data was available from the clinical questionnaire. In other cases the data used was the average salary paid by Ohio State University Hospitals in the 1974-75 year. This appeared to be a logical source of data since the majority of the clinical preceptors in integrated clinicals are in the University hospital system.

Teaching responsibility units #2, #3, and #6 salaries were obtained from the Office of Personnel Services at Ohio State. The average salary for SAMP faculty (TRU #2) was $16,544. Average eleven-month salary for health center faculty was $21,276 while the nine-month average salary for TRU #6 (general university) was $17,925.

STEP 9: FACULTY COST

Faculty costs per teaching responsibility unit is calculated by multiplying the number of FTEs (Step 7) by the average faculty salary (Step 8) to obtain the faculty costs.

STEP [illegible]: OTHER COST

TEACHING RESPONSIBILITY UNIT #1: OTHER COST:

Teaching responsibility unit #1 other costs calculations are based on actual data for 1974-75.

Support Staff

Support staff figures are actual salaries paid to clerical personnel in each of the divisions.

Space

Data obtained from the original blueprints of the building allowed the square footage in the building to be divided between shared space (such as hallways, shared classrooms, lounges, restrooms) and assigned space. Assigned space (faculty offices, laboratories, etc.) was allocated to each division. All remaining space was divided equally among the students enrolled in the school. The number of feet shared by each division was then calculated by multiplying the number of students in the division by the shared space factor, (179.5 square feet per student). Assigned space plus shared space equaled the total square footage allocated to the program.

Then a cost was allocated to each square foot of space. Data from the physical facility department for electricity, sewage, and water rates was translated into cost per square foot (in this case the rate being $.96 per square foot per year). Cost per square foot times the total square footage allocated equals the cost of space for each division.

Operating Budget for Supplies and Equipment

The school's budgeting procedure provides information about actual operating expenditures primarily for supplies and equipment by each division for the 1974-75 fiscal year. Operating money contributions from other money sources, e.g., hospital money which supports the Medical Technology program, are included in this figure.

SAMP Administration

Total administration cost included personnel cost (both professional and clerical), operating budget, and space cost allocation. Size of program (student enrollment and faculty head counts) was not seen as a determining factor in allocating SAMP administration cost but rather a division, regardless of its size, was seen as demanding the same amount of administration efforts. Therefore, the total of the three cost factors was divided by the number of divisions in the school to obtain SAMP Administration Costs (13). This is somewhat arbitrary but appeared to be the best solution to allocating this cost.

Central Administration Cost: Cost Per Student

Central administration cost include the central administration personnel cost plus estimated central administration operating budget divided by the number of OSU students on all campuses. Personnel costs for 1974-75 were $30,971,992 which included such administrative offices as Board of Trustees, the President, Budget and Resource Planning, Academic Affairs, Educational Service, Medical Affairs, University Development, and Business and Administration. The operating budget for the central administration was calculated (estimated) by examining the relationship for the entire University between the operating budget and the personnel budget. Dividing the actual percent of budget in operating for the entire University (31.1%) by the actual percent of personnel budget for the University (68.2%) yields a multiplying or weighting factor (.456). The actual central administration personnel budget ($30,971,992) multiplied by the weight factor (.456) produces the estimated central administration operating budget ($14,123,228). Adding the personnel costs plus the operating budget ($45,095,220) divided by the number of OSU students (53,514) yields the central administration costs per student ($842.68).

Since central administration costs are not accrued to a single teaching responsibility unit, allocating the entire $842.68 to a single teaching responsibility unit (i.e., TRU #1) distorts by overestimating the program cost per student. Central administration cost for all TRUs other than TRU #1 is included in the other cost estimation factor (i.e., 1.4 for TRU #2, #3, #4, and 1.1 for TRU #6). Therefore, the entire $842.68 should not be included in the other cost for TRU #1.

The appropriate proportion of central administration cost was allocated based on the percent of the required curriculum (defined as required student contact hours) that was offered in TRU #1. Therefore, if TRU #1 contained 40% of the curriculum, cost per student for TRU #1 for central administration would equal 40% times $842.68 or $337.07.

College of Medicine Administration:

College of Medicine (COM) administration cost per student was calculated in the same way as was the central administration cost. That is, the personnel budget (clerical plus professional) was obtained ($721,500) for the COM administrative and support staff. That number was multiplied by the "personnel to other cost" factor of .456 to estimate the operating budget.

The operating budget plus the personnel budget divided by the number of College of Medicine students (Medicine + SAMP + School of Nursing) results in a COM administration program cost per student of $504.80. The number of students enrolled in the school for each division was multiplied by this cost per student to provide the COM administration cost per program.

All of the above cost were added together to obtain the total other cost factor for TRU #1 other cost. Guest lecturer and clinical personnel "other cost" are not included in this calculation and are assigned an estimated overhead cost using the procedures described below.

TEACHING UNITS 2-6: ESTIMATING OTHER COST:

To estimate the "Other Cost" factors for the medically related teaching units, the relationship between other cost and faculty cost was analyzed for the ten SAMP divisions. Using School averages, it was found that the faculty cost comprise approximately 43% of the total costs. This data is similar to national comparative data. Therefore, for TRU #2 - #4, an other cost multiplying factor of 1.4 (57% divided by 43%) was used [illegible] estimate other costs. Faculty cost multiplied by 1.4 yields estimated other cost. This estimate was also used for TRU #1 guest lecturers and clinical personnel.

TRU #6 other cost relationships were estimated by examining the relationship of faculty cost on a university-wide basis to all other expenditures. Faculty cost were found to represent 47.6% of the total. Therefore, an other cost multiplying factor of 1.1 (52.4 divided by 47.6%) was used in estimating other cost for TRU #6.

STEP 11 AND STEP 12: TOTAL PROGRAM COST AND PROGRAM COST PER STUDENT

STEP 11: Total Program Cost

Step 11 is calculated by adding Step 9 (faculty cost) to Step 10 (other cost) for each teaching responsibility unit.

STEP 12: Average Program Cost Per Student Per Year

Dividing Step 11 by the total number of students in the four year program yields the average total program cost per student per year per teaching responsibility unit. Adding the teaching unit totals yields the average total program cost per student per year.

Appendix J. Theoretical Construction

Step Detail Description

Step	
13	Faculty Organization Options for TRU #1
14	Clinical Costing Options
15	Theoretical Construction Assumptions
16	Yearly Cost Analysis

STEP 13: FACULTY ORGANIZATION OPTIONS FOR TRU #1

Step 13 was an early precurser to the theoretical construction analysis. Step 13 allowed for the evaluation of the impact of changing the faculty structure in TRU #1. This analysis was an initial attempt to provide information in order to answer the question "What happens if you change the present faculty structure into some other pattern of full and part-time faculty usage?" What is the impact on cost and FTE requirements if full versus part-time personnel are used as instructors?

Several configurations of faculty structure were examined and compared to existing program organizations. The only assumptions built into this secondary analysis were the following: 1). the percentage of time available for direct contact by a full-time faculty member is equal to the "Ideal" percentage as found in the faculty activity analysis and 2.) that part-time individuals had 75% of their time available for direct contact.

The faculty organization which appeared to provide for the maximum benefit with minimum cost chosen for use in the final theoretical construction is as follows:

1. Full-time faculty would teach 100% of the lectures
2. Full-time faculty would teach 100% of the laboratory
3. Full-time faculty would teach 25% of the clinic
4. Part-time faculty would teach 75% of the clinic

STEP 14: CLINICAL COSTING OPTIONS

In calculations of faculty contact hours for the three divisions with TRU #4 without regard to the question of joint production, it was assumed that each clinical site required a faculty member (clinical preceptor) to supervise the student 100% of the time that the student was at the facility. Therefore, if there were 29 Medical Record Administration sites and each student was at a facility for 40 hours per week for 10 weeks, then (29 x 10 x 40 hours) 11,600 hours would have been assigned. These hours were divided by the hours of direct contact available (assumed from Step 6 to be 1920 hours per year) in order to estimate the number of FTEs needed to accomplish the necessary teaching in the clinical program.

One might ask the question of whether the preceptor is engaged in other activities (e.g., patient care) while the student is present at the facility. If so, then the program should not be charged the entire amount of the faculty member's time.

In order to understand the student's activities while at the facility, question 6a from the clinical questionnaire was evaluated. 'What was the students average percentage of time in each of the following activities while at your facility'.

The results:

	PERCENT OF TIME		
	Instruction and Demonstration	Supervision	Other Activities
Medical Record Administration	38%	46%	16%
Occupational Therapy	21%	63%	16%
Physical Therapy	21%	69%	10%

Assuming that one would cost all of the time in instruction and demonstration and none of the time in other activities (which include such activities as staff meetings) the question then asked was, "What percentage of the supervised time should legitimately be assigned as a cost to the program as instructional activities and what percentage should be considered patient care, i.e., production of joint activities?"

The clinical options defined in Step 14 described the cost effects of four options of costing the supervision time: Option #1 - 100% of the supervision time; Option #2 - 50% of the supervision time; Option #3 - 25% of the supervision time; and Option #4 - 12.5% of the supervision time. It should be recalled that in all cases 100% of the instruction-demonstration time was assigned as a cost and 0% of the 'other' time was assigned.

Option #2 - 50% of the supervision time assigned to direct contact was chosen as the assumption to be used in the "Actual" analysis and "Theoretical" construction.

STEP 15: THEORETICAL CONSTRUCTION ASSUMPTIONS

It is important to remember that the majority of the assumptions utilized in the theoretical constructions are designed to impact exclusively upon TRU #1 although some variables have a slight impact upon other TRU's. The change in the number of students is the major source of variation in other teaching units.

In the construction of the theoretical analysis five variables have been changed. They are as follows:

1. Number of students in the total program
2. Faculty-student ratios for TRU #1 and #4
3. Faculty organization in TRU #1
4. Faculty time available for direct contact
5. Faculty salaries for clinical personnel

Therefore, any resulting change in the cost per student would be a function of one or more of the above five variables.

The objective was to compare the resulting costs per student from the"Theoretical"construction with those costs per student which were ascertained in the "Actual" analysis.

NUMBER OF STUDENTS

The goal of the theoretical constructions was to increase efficiency in the utilization of faculty which would result in the lowest cost per student while retaining quality. The efficient utilization of faculty is a function of the smallest student group size which occurs in the program, usually the clinical instruction mode. Therefore, in the theoretical constructions, the number of students per year was determined to be a number which was a multiple of the smallest group size per mode. Then this number was utilized to establish the total number of students in the program, again as a direct multiple.

FACULTY-STUDENT RATIOS FOR TRU #1 AND #4

Minimal changes were made in this variable for the lecture and laboratory modes. In some cases, however, ratios were changed to provide efficient ratios between modes. For example, if the ratio in the clinical mode was one faculty member to 8 students and the laboratory actual ratio was one faculty to 23 students, then the ratio was changed for the laboratory. The new ratio would be 1-24, since twenty-four is a multiple of eight.

Results of the clinical questionnaire data and discussion with division directors indicated that, in certain programs, the maximum faculty-student ratio for clinic could be 1-3 rather than the actual 1-1 or 2. This change in variable has a significant effect on faculty requirements and cost.

FACULTY ORGANIZATION FOR TRU #1

In general the faculty contact hours were assumed to be distributed as follows:

1. Full-time faculty would teach 100% of the lectures
2. Full-time faculty would teach 100% of the laboratory
3. Full-time faculty would teach 25% of the clinic
4. Part-time faculty would teach 75% of the clinic

In those cases where the curriculum demanded no clinic hours in TRU #1, the laboratory hours were divided 25% - 75% between full and part-time faculty. Only two divisions, Medical Illustration and Physical Therapy, had no clinicals in TRU #1 and were assigned percentages in this manner.

FACULTY PERCENTAGE OF TIME AVAILABLE FOR DIRECT CONTACT

In the theoretical constructions, Teaching Responsibility Unit #1 full-time faculty were assumed to have 30% of their time available for direct contact. This is a major change from the actual data and is a significant source of change in the resulting cost per student. This assumption has differential impact when one compares the costs in the "Actual" and "Theoretical" analysis. In general it is due to the extent that the faculty approaches providing 30% of their total time for direct contact to students. Obviously, the closer the approximation the smaller the difference.

In the "Actual" analysis it was assumed that clinical faculty were available 100% of the time (1920 hours per year) for direct contact. In the "Theoretical" analysis it was assumed that they were available 75% of the time (1440 hours per year) for direct contact. Programs that approach the latter assumption in the "Actual" analysis will have less of a difference between student costs per year in the "Actual" and "Theoretical" analysis.

FULL-TIME FACULTY REQUIREMENTS IN TRU #1

In the theoretical construction, Teaching Responsibility Unit #1 full-time faculty were calculated on a full-time equivalent basis with two decimal positions in the numerical value. In order to obtain a full-time body count, the FTE value was rounded to the next whole number when the decimal position exceeded .33. The assumption made was that any more than a one-third increase in the FTE requirement would constitute an overload on the existing full-time faculty and would require the services of one additional full-time faculty member. This rounding assumption applies only to TRU #1 full-time faculty.

FACULTY SALARIES FOR PROVIDING CLINICAL EDUCATION

In the theoretical construction, it was assumed that the clinical (part-time) faculty would be paid at the same rate for an FTE as would a full-time faculty member. In the "Actual" analysis, clinical faculty frequently were paid at a significantly lower rate than the didactic faculty. Therefore, the cost of the part-time clinical faculty are inflated to the extent that a discrepancy in pay rates exists.

To ascertain the effect of this variable, one need only compare the FTE requirements for the "Actual" and the "Theoretical" analysis. If the FTE requirements are similar in both analyses, but the cost per student is higher in the "Theoretical" analysis, then it is the result of the salary assumption for the clinical part-time faculty members.

6

STEP 16: YEARLY COST ANALYSIS

The cost of educating students is not evenly distributed over each of the four years. In order to ascertain what the program cost per student was for each of the years, i.e., Freshman, Sophomore, Junior, and Senior year, Step 16 was developed. Data from Step 12, the program cost per student per year by TRU, is utilized to obtain the desired result.

The number of faculty contact hours per TRU per year is expressed as a percentage of the total number of faculty contact hours per teaching unit. Then these percentages are utilized to distribute the cost to each of the four years. An example follows. If there were 300 FCH in TRU #3 with 100 (33%) in the Freshman year and 200 (67%) in the Sophomore year, then none (0%) would be in the Junior or Senior year. If (from Step #12) the average program cost per year of TRU #3 were $60 then $20 (33%) was assigned to the Freshman year and $40 (67%) was assigned to the Sophomore year. By completing this procedure for each TRU and totaling for each year, the program cost per student per year was obtained.

Appendix K. Program Cost Analysis
Medical Dietetics
OSU:SAMP: Actual 1974-75

Steps 1 - 12, 15, 16

Program Cost Analysis: Medical Dietetics Detailed Results

Step 1: Curriculum Description: Detail

MEDICAL DIETETICS CURRICULUM
1974 - 1975

FRESHMAN YEAR
Preprofessional

AUTUMN QUARTER STUDENT CONTACT HOURS PER QUARTER

Teaching Responsibility Unit	Course	Credit Hours	Lecture	Recitation	Lab	Clinic	Total
6	Freshman Eng. Comp.	5	50				50
6	Elementary Chemistry	5	30	10	30		70
6	Mathematics	5	30	20			50
6	Physical Education	1			30		30
6	Univ. College Survey	1	20				20
	Quarter Total	17					220

WINTER QUARTER

Teaching Responsibility Unit	Course	Credit Hours	Lecture	Recitation	Lab	Clinic	Total
6	Intro. Sociology	5	30	20			50
6	Elementary Chemistry	5	30	10	30		70
6	General Biology	5		20	30		50
6	Physical Education	1			30		30
	Quarter Total	16					200

SPRING QUARTER

Teaching Responsibility Unit	Course	Credit Hours	Lecture	Recitation	Lab	Clinic	Total
6	General Psychology	5	50				50
6	Humanities	5	30	20			50
6	Physical Education	1			30		30
6	Small Group Communic.	5	10	40			50
	Quarter Total	16					180
	Yearly Total	49	280	140	180	0	600

Teaching Responsibility Unit Codes :

1= Medical Dietetics

2= School of Allied Medical Professions

3= OSU Health Center

4= Affiliated Clinics

5= Other

6= General University

MEDICAL DIETETICS CURRICULUM

SOPHOMORE YEAR
Professional

Teaching Responsibility Unit	Course	Credit Hours	STUDENT CONTACT HOURS PER QUARTER				
			Lecture	Recitation	Lab	Clinic	Total
AUTUMN QUARTER							
3	Gross Human Anatomy	6	30		60		90
6	Introduction to Econ.	5	50				50
6	Humanities	5	30	20			50
	Quarter Total	16					190
WINTER QUARTER							
3	Human Physiology	5	40		20		60
6	Fundamentals of Nutrition	5	50				50
6	Microbiology	5	30		40		70
1	Intro. to Med. Dietetics	1	15				15
	Quarter Total	16					195
SPRING QUARTER							
3	Human Physiology	5	40		20		60
6	Principles of Food	5	20		60		80
6	Social Science	5	50				50
	Quarter Total	15					190
	YEARLY TOTALS	47	355	20	200	0	575

MEDICAL DIETETICS CURRICULUM

JUNIOR YEAR
Professional

AUTUMN QUARTER

STUDENT CONTACT HOURS PER QUARTER

Teaching Responsibility Unit	Course	Credit Hours	Lecture	Recitation	Lab	Clinic	Total
1	Intro. to Patient Dietary Care	6	40			50	90
1	Data Processing in Diet.	1	30				30
1	Mgmt. & Med. Dietetics	3	20			60	80
3	Physiological Chemistry	4	45				45
2	Mgmt. of Hosp. Depts.	3	30				30
	Quarter Total	17					275
WINTER QUARTER							
1	Nutrition & Human Metab.	6	40			50	90
3	Physiological Chemistry	4	45				45
6	Humanities	5	50				50
1	Mgmt. & Med. Dietetics	3	20			60	80
	Quarter Total	18					265
SPRING QUARTER							
1	Nutrition & Human Metab.	6	40			50	90
1	Mgmt. & Med. Dietetics	3	20			60	80
3	Critical Reading of Scientific Literature	2	20				20
6	Educ. Psychology	5	50				50
	Quarter Total	16					240
	YEARLY TOTALS	31	450	0	0	330	780

MEDICAL DIETETICS CURRICULUM

SENIOR YEAR
Professional

SUMMER QUARTER

STUDENT CONTACT HOURS PER QUARTER

Teaching Responsibility Unit	Course	Credit Hours	Lecture	Recitation	Lab	Clinic	Total
1	Nutrition & Human Metab.	6	40			50	90
1	Dietitian as a Teacher	3	20			30	50
6	Elective	5	50				50
1	Group Studies in Diet.	3	10			120	130
	Quarter Total	17					320
AUTUMN QUARTER							
1	Community Nutrition	5	47			120	167
1	Pediatric Nutrition	5	20			150	170
6	Elective	5	50				50
	Quarter Total	15					387
WINTER QUARTER							
1	Advanced Med. Diet.	10	60			200	260
6	Elective	5	50				50
	Quarter Total	15					310
SPRING QUARTER							
1	Advanced Med. Diet.	10	60			195	255
6	Elective	5	50			—	50
	Quarter Total	15					305
	YEARLY TOTAL	62	457	0	0	865	1322
	PROGRAM TOTAL	209	1542	160	380	1195	3277

Step 3: Student Class Characteristics

99 Students in Program
25 Students per Class
4 Classes

Calculated Faculty-Student Ratios for Teaching Responsibility Unit 1:
Lecture: 1-13
Lab: ----
Clinic: 1-6

E.5

TRU1: Medical Dietetics

Step 2: Curriculum Description: Summary

Step 4: Faculty Requirements

Teaching Responsibility Unit	Course	STUDENT CONTACT HOURS Lecture	Lab	Clinic	Quarter Total	FACULTY CONTACT HOURS Lecture	Lab	Clinic	Quarter Total
1	Medical Dietetics 201	15	--	--	15	17	--	--	17
1	Medical Dietetics 410	40	--	50	90	64	--	90	154
1	Medical Dietetics 411	30	--	--	30	39	--	--	39
1	Medical Dietetics 420	20	--	60	80	29	--	60	89
1	Medical Dietetics 521	40	--	50	90	63	--	200	263
1	Medical Dietetics 421	20	--	60	80	20	--	66	86
1	Medical Dietetics 522	40	--	50	90	47	--	200	247
1	Medical Dietetics 422	20	--	60	80	20	--	120	140
1	Medical Dietetics 523	40	--	50	90	100	--	200	300
1	Medical Dietetics 636	20	--	30	50	20	--	30	50
1	Medical Dietetics 637	47	--	120	167	61	--	600	661
1	Medical Dietetics 638	20	--	150	170	22	--	150	172
1	*Medical Dietetics 645*	*60*	--	*200*	*260*	*106*	--	*490*	*596*
1	Medical Dietetics 645	60	--	200	260	106	--	490	596
1	*Medical Dietetics 638*	*20*	--	*150*	*170*	*22*	--	*150*	*172*
1	*Medical Dietetics 637*	*47*	--	*120*	*167*	*69*	--	*600*	*669*
1	Medical Dietetics 646	60	--	195	255	124	--	990	1114
1	*Allied Medicine 693*	*20*	--	--	*20*	*20*	--	--	*20*
1	Allied Medicine 694.04	10	--	120	130	10	--	240	250
	Offered TOTAL	*629*	--	*1665*	*2294*	*959*	--	*4676*	*5635*
	Required TOTAL	482	--	1195	1677	742		3436	4178

TEACHING RESPONSIBILITY UNIT:
1 = Medical Dietetics
2 = Other SAMP
3 = Health Center
4 = Affiliated Clinics
5 = Other
6 = General University

LETTER GOTHIC SCRIPT: Required Courses
ITALICIZED SCRIPT: Offered Courses

MEDICAL DIETETICS

No Faculty-Student Ratios for Teaching Responsibility Unit 2
Assumed Faculty-Student Ratios for Teaching Responsibility Unit 3:
Lecture: 1-50
Lab: 1-16

TRU2: Allied Medicine

		Step 2				Step 4			
		STUDENT CONTACT HOURS				FACULTY CONTACT HOURS			
Teaching Responsibility Unit	Course	Lecture	Lab	Clinic	Quarter Total	Lecture	Lab	Clinic	Quarter Total
2	Allied Medicine 630	30	--	--	30	14	--	--	14
	TOTAL	30	--	--	30	14	--	--	14

TRU3: OSU Health Center

Teaching Responsibility Unit	Course	Lecture	Lab	Clinic	Quarter Total	Lecture	Lab	Clinic	Quarter Total
3	Anatomy 200	30	60	--	90	15	94	--	109
3	Physiology 311	40	20	--	60	20	31	--	51
3	Physiology 312	40	20	--	60	20	31	--	51
3	Physiological Chemistry 311	45	--	--	45	23	--	--	23
3	Physiological Chemistry 312	45	--	--	45	23	--	--	23
3	Preventive Medicine 623	20	--	--	20	10	--	--	10
	TOTAL	220	100	--	320	111	156	--	267

TEACHING RESPONSIBILITY UNIT:
1 = Medical Dietetics
2 = Other SAMP
3 = Health Center
4 = Affiliated Clinics
5 = Other
6 = General University

Assumed Faculty-Student Ratios for Teaching Responsibility Unit 6:

Lecture:	**1-100**
Recitation:	**1- 25**
Lab:	**1- 25**

TRU6: General University

Teaching Responsibility Unit	Course	Step 2: STUDENT CONTACT HOURS				Step 4: FACULTY CONTACT HOURS			
		Lecture	Lab	Recit.	Quarter Total	Lecture	Lab.	Recit.	Quarter Total
6	English 100	50	--	--	50	13	--	--	13
6	Chemistry 101/201	30	30	10	70	8	30	10	48
6	Mathematics	30	--	20	50	8	--	20	28
6	Physical Education 101	--	30	--	30	--	30	--	30
6	University College Survey 100	20	--	--	20	5	--	--	5
6	Sociology 101/201	30	--	20	50	8	--	20	28
6	Chemistry 102/122	30	30	10	70	8	30	10	48
6	Botany/Zoology 110	--	30	20	50	--	30	20	50
6	Physical Education 101	--	30	--	30	--	30	--	30
6	Psychology 100	50	--	--	50	13	--	--	13
6	Humanities	30	--	20	50	8	--	20	28
6	Physical Education 101	--	30	--	30	--	30	--	30
6	Speech/Communications 105/110	10	--	40	50	3	--	40	43
6	Economics 100	50	--	--	50	13	--	--	13
6	Humanities	30	--	20	50	8	--	20	28
6	Home Economics 310	50	--	--	50	13	--	--	13
6	Microbiology 509	30	40	--	70	8	40	--	48
6	Home Economics 314	20	60	--	80	5	60	--	65
6	Social Science	50	--	--	50	13	--	--	13
6	Humanities	50	--	--	50	13	--	--	13
6	Psychology 230	50	--	--	50	13	--	--	13
6	Elective	50	--	--	50	13	--	--	13
6	Elective	50	--	--	50	13	--	--	13
6	Elective	50	--	--	50	13	--	--	13
6	Elective	50	--	--	50	13	--	--	13
	TOTAL	810	280	160	1250	212	280	160	652

TEACHING UNIT:

1 = Medical Dietetics
2 = Other SAMP
3 = Health Center
4 = Affiliated Clinics
5 = Other
6 = General University

MEDICAL DIETETICS

Step 2, 4: Summary

		Step 2: Student Contact Hours					Step 4: Faculty Contact Hours				
Teaching Responsibility Unit	Course	Lecture	Recit.	Lab	Clinic	Total	Lecture	Recit.	Lab	Clinic	Total
1	Medical Dietetics	482	--	--	1195	1677	959	--	--	4676	5635
2	Allied Medicine	30	--	--	--	30	14	--	--	--	14
3	OSU Health Center	220	--	100	--	320	111	--	156	--	267
6	General University	810	160	280	--	1250	212	160	280	--	652
	PROGRAM TOTAL	1542	160	380	1195	3277	1296	160	436	4676	6568

MEDICAL DIETETICS ANALYSIS

Faculty Contact Hours by Faculty Type

L = Lecture   C = Clinical

COURSE	Full-time Faculty																						Grad. Teach. Assoc.		Guest Lecturers		Off-Site Clinical Faculty	
	AA		BB		CC		DD		EE		FF		GG		HH		II		JJ		KK							
	L	C	L	C	L	C	L	C	L	C	L	C	L	C	L	C	L	C	L	C	L	C	L	C	L	C	L	C
MD 201	15																								2			
MD 410			28	30	5	30	16	30															5		10			
MD 411									30														3		6			
MD 420									20	60													9					
MD 521			11	40	12	40					8	40	8	40									4	40	20			
MD 421									20	60														6				
MD 522			8	40	7	40					3	40	5	40										40	24			
MD 422									20	60														60				
MD 523			10		23										11	50	10		22	50			14	50	10			50
MD 636															20	30												
MD 637																					57	120			4			480
MD 638																	20	150							2			
MD 645															50	100			50	100					6			290
SUBTOTAL A	15	--	57	110	47	110	16	30	90	180	11	80	13	80	81	180	30	150	72	150	57	120	35	196	84	---	---	820

MEDICAL DIETETICS ANALYSIS (cont'd)

L = Lecture C = Clinical

	Full-time Faculty																						Grad. Teach. Assoc.		Guest Lecturers		Off-Sit Clinica Faculty	
	AA		BB		CC		DD		EE		FF		GG		HH		II		JJ		KK							
COURSE	L	C	L	C	L	C	L	C	L	C	L	C	L	C	L	C	L	C	L	C	L	C	L	C	L	C	L	C
MD 645															50	100			50	100					6			290
MD 638																	20	150							2			
MD 637																					57	120			12			480
MD 646										100					50	100		100	50	100		100	2	200	22			290
AM 693									20																			
AM 694.04							10	120																120				
SUBTOTAL B	--	--	--	--	--	--	10	120	20	100	--	--	--	--	100	200	20	250	100	200	57	220	2	320	42	--	--	1060
SUBTOTAL A	15	--	57	110	47	110	16	30	90	180	11	80	13	80	81	180	30	150	72	150	57	120	35	196	84	---	--	820
TOTAL	15	--	57	110	47	110	26	150	110	280	11	80	13	80	181	380	50	400	172	350	114	340	37	516	126	---	---	1880
GRAND TOTAL	15		167		157		176		390		91		93		561		450		522		454		553		126		1880	

Step 4.5 Summary

	Lecture	Clinic	Total
Fulltime Faculty	796	2280	3076
GTA, Guest, Clinical Personnel	163	2396	2559
TOTAL	959	4676	5635

Medical Dietetics Analysis

Steps 5-6-7-8-9: Page 1 of 1

Step 5: Faculty Structure					Step 6: Faculty Availability for contact			Step 7:	Step 8:	Step 9:
TEACHING UNIT	FACULTY LECTURE	CONTACT LAB	HOURS CLINIC	TOTAL	YEAR LENGTH	HOURS OF DIRECT CONTACT	% OF TOTAL HOURS	FACULTY FTE	AVERAGE SALARY	FACULTY COST
1 MEDICAL DIETETICS ON-SITE:										
Full-time	796		2280	3076	1920	280	14.6%	11.0	14,818	162,998
Part-time	---	---	----	----	----	----	-----	----	-------	--------
Grad.Teach.Assoc.	37	---	516	553	1920	553	28.8%	1.0	9,360	9,360
ON-SITE TOTAL	833	---	2796	3629						172,358
Guest Lecturers	126	---	----	126	1920	1920	100%	.1	14,000	1,400
Clinical Faculty	---	---	1880	1880	1920	1920	100%	1.0	10,000	10,000
UNIT TOTAL	959	---	4676	5635				13.1		183,758
2 SAMP	14	---	----	14	1920	442	23.0%	0	16,544	0
3 HEALTH CENTER	111	156	----	267	1920	442	23.0%	0.6	21,276	12,766
6 GENERAL UNIVERSITY	372	280	----	652	1440	432	30.0%	1.5	17,925	26,888
PROGRAM TOTAL	1456	436	4676	6568				15.2		$223,412

MEDICAL DIETETICS ANALYSIS

	Step 9	Step 10: Other Costs							Step 11	Step 12
TEACHING RESPONSIBILITY UNIT	FACULTY COSTS	SUPPORT PERSONNEL	SPACE	SUPPLIES & EQUIPMENT	SAMP ADMIN.	MED SCHOOL ADMIN.	CENTRAL ADMIN.	TOTAL OTHER COSTS	TOTAL COST	COST PER STUDENT n=99
1 MEDICAL DIETETICS										
On-Site Total	172,358	30,835	14,897	16,743	12,756	34,326	42,631	152,188	324,546	3,278
Guest Total	1,400							1,960	3,360	34
Clinical Faculty Total	10,000							14,000	24,000	242
UNIT TOTAL	183,758							168,148	351,906	3,554
2 SAMP	0							0	0	0
3 HEALTH CENTER	12,766							17,872	30,638	309
6 GENERAL UNIVERSITY	26,888							29,577	56,465	570
PROGRAM TOTAL	$223,412							$215,597	$439,009	$4,433

MEDICAL DIETETICS THEORETICAL CONSTRUCTION

STEP 15: Page 1 of 1

	ACTUAL	IDEAL
# Students/Class	21	24
Program Total	[illegible]	[illegible]

	Step:	#2 STUDENT CONTACT HOURS	#3 F/S FACTOR	#4-#5 FACULTY CONTACT HOURS	#6 DIRECT CONTACT Hrs/Yr.	#7 FACULTY FTE REQUIRED	#8 FACULTY AVERAGE SALARY	#9 FACULTY COST	#10 OTHER COSTS 1.4, 1.1	#11 TOTAL COST	#12 COST PER STUDENT THEORETICAL
TRU #1											
Faculty:	Fulltime Lecture	482	1	482							
	Lab	0	0	0							
	Clinic	299	3	897							
	FULLTIME TOTAL	781		1379	576	2.4=3.0	14,818	44,454	62,236	106,690	1,111
	Parttime Clinic	896	3	2688	1440	1.9	14,818	28,154	39,416	67,570	704
	CLINIC TOTAL	1195		3585							
	TRU #1 TOTAL	1677		4067		4.9		72,608	101,652	174,260	1,815
TRU #2	Lecture	30	.5	15							
	Lab	0		0							
	Clinic	0		0							
	TOTAL	30		15	442	0	16,544				0
TRU #3	Lecture	220	.48	106							
	Lab/Rec	100	1.5	150							
	Clinic	0		0							
	TOTAL	320		256	442	0.6	21,276	12,766	17,872	30,638	319
TRU #4	Lecture	0		0							
	Lab	0		0							
	Clinic	0		0							
	TOTAL	0		0	0	0	0	0	0	0	0
TRU #6	Lecture	810	.24	194							
	Lab/Rec	440	.96	422							
	Clinic	0		0							
	TOTAL	1250		616	432	1.4	17,925	25,095	27,605	52,700	549
	PROGRAM TOTAL	3277		4954		6.9		110,469	147,129	257,598	$2683

Step 16: Page 1 of 1

MEDICAL DIETETICS: YEARLY COST ANALYSIS

Number of Students per Class 25
Program Total 99

	FACULTY CONTACT HOURS PER YEAR					TOTAL COST PER TRU	TOTAL COST PER YEAR				COST PER STUDENT YEAR			
	1	2	3	4	TOTAL		1	2	3	4	1	2	3	4
TRU #1	0	17	1018	4600	5635	351,906	0	1056	63695	287155	0	43	2569	11607
TRU #2	0	0	14	0	14	0	0	0	0	0	0	0	0	0
TRU #3	0	211	56	0	267	30,638	0	24212	6426	0	0	978	260	0
TRU #6	394	180	26	52	652	56.465	34,121	15588	2252	4503	1378	629	90	181
TOTAL	394	408	1114	4652	6568					TOTAL:	$1378	$1650	$2919	$11788

AVERAGE COST PER YEAR: $4434

Appendix L. Program Cost Analysis: Data
OSU:SAMP: Actual 1974-75 Steps 7-12

1. Circulation Technology
2. Medical Communications
3. Medical Dietetics
4. Medical Illustration
5. Medical Record Administration
6. Medical Technology
7. Occupational Therapy
8. Physical Therapy
9. Radiologic Technology
10. Respiratory Technology

OSU:SAMP: Cost Study: Program Cost Analysis Steps 7-12 for Circulation Technology Actual 1974-75

TEACHING RESPONSIBILITY UNIT: FACULTY TYPE:	STEP	Step 7	Step 8	Step 9	Step 10		Step 11	Step 12	
	CALCULATION PROCESS			Step 7 X 8 =	Actual or Step 9 X OC Factor		Step 9 & 10 =	Step 11 ÷ Student Number	
	ELEMENT	Faculty FTE	Average Salary $	Faculty Cost $	Other Cost Factor	Other Cost $	Total Cost $	Student Number	Cost per Student $ Average
#1 Circulation Technology									
On Site:									
Full-Time		4.0	15,588	62,352					
Part-Time		-	-	-					
GTA									
Total		4.0		62,352	Actual	65,191	127,543	44	2,898
Guest Lecturers		-		-		-	-		-
Clinical Faculty		1.8	13,328	23,990	1.4	33,586	57,576	44	1,309
Unit Total		5.8		86,342		98,777	185,119	44	4,207
#2 SAMP		-		-		-	-		-
#3 Health Center		.1	21,276	2,128	1.4	2,979	5,107	44	116
#4 Clinical: Off Site		-		-		-	-		-
#6 General University		.8	17,925	14,340	1.1	15,774	30,114	44	684
PROGRAM TOTAL		6.7		102,810		117,530	220,340	44	5,007

OSU:SAMP: Cost Study: Program Cost Analysis Steps 7-12 for Medical Communications Actual 1974-75

TEACHING RESPONSIBILITY UNIT: FACULTY TYPE:	STEP	Step 7	Step 8	Step 9	Step 10		Step 11	Step 12	
	CALCULATION PROCESS			Step 7 X 8 =	Actual or Step 9 X OC Factor		Step 9 & 10 =	Step 11 ÷	Student Number
	ELEMENT	Faculty FTE	Average Salary $	Faculty Cost $	Other Cost Factor	Other Cost $	Total Cost $	Student Number	Cost per Student $ Average
#1 Medical Communications									
On Site:									
Full-Time		3.0	15,968						
Part-Time		-	-						
GTA									
Total		3.0		47,904	Actual	55,005	102,909	61	1,687
Guest Lecturers		.1	15,968	1,597	1.4	2,236	3,833	61	63
Clinical Faculty		1.1	11,500	12,650	1.4	17,710	30,360	61	498
Unit Total		4.2		62,151		74,951	137,102	61	2,248
#2 SAMP		.2	16,544	3,309	1.4	4,633	7,942	61	130
#3 Health Center		.1	21,276	2,128	1.4	2,979	5,107	61	84
#4 Clinical: Off Site		-		-		-	-		-
#6 General University		1.1	17,925	19,718	1.1	21,690	41,408	61	679
PROGRAM TOTAL		5.6		87,306		104,253	191,559		3,141

OSU:SAMP: Cost Study: Program Cost Analysis Steps 7-12 for Medical Dietetics Actual 1974-75

TEACHING RESPONSIBILITY UNIT: FACULTY TYPE:	STEP	Step 7	Step 8	Step 9	Step 10		Step 11	Step 12	
	CALCULATION PROCESS			Step 7 X 8 =	Actual or Step 9 X OC Factor		Step 9 & 10 =	Step 11 ÷ Student Number	
	ELEMENT	Faculty FTE	Average Salary $	Faculty Cost $	Other Cost Factor	Other Cost $	Total Cost $	Student Number	Cost pe Student $ Averag
#1 Medical Dietetics									
On Site:									
Full-Time		11.0	14,818	162,998					
Part-Time		1.0	9,360	9,360					
GTA									
Total		12.0		172,358	Actual	152,188	324,546	99	3,278
Guest Lecturers		.1	14,000	1,400	1.4	1,960	3,360	99	34
Clinical Faculty		1.0	10,000	10,000	1.4	14,000	24,000	99	242
Unit Total		13.1		183,758		168,148	351,906	99	3,554
#2 SAMP		-	16,544	-		-	-		-
#3 Health Center		0.6	21,276	12,766	1.4	17,872	30,638	99	309
#4 Clinical: Off Site		-	-	-		-	-		-
#6 General University		1.5	17,925	26,888	1.1	29,577	56,465	99	570
PROGRAM TOTAL		15.2		223,412		215,597	439,009		4,433

OSU:SAMP: Cost Study: Program Cost Analysis Steps 7-12 for Medical Illustration Actual 1974-75

TEACHING RESPONSIBILITY UNIT: FACULTY TYPE:	STEP	Step 7	Step 8	Step 9	Step 10		Step 11	Step 12	
	CALCULATION PROCESS			Step 7 X 8 =	Actual or Step 9 X OC Factor		Step 9 & 10 =	Step 11 ÷ Student Number	
	ELEMENT	Faculty FTE	Average Salary $	Faculty Cost $	Other Cost Factor	Other Cost $	Total Cost $	Student Number	Cost pe Student $ Averag
#1	Medical Illustration On Site:								
	Full-Time	7.0	11,834	82,838					
	Part-Time	-	-	-					
	GTA								
	Total	7.0		82,838	Actual	50,314	133,152	19	7,008
	Guest Lecturers	.1	23,336	2,334	1.4	3,268	5,602	19	295
	Clinical Faculty	-	-	-		-	-		-
	Unit Total	7.1		85,172		53,582	138,754	19	7,303
#2	SAMP	-		-		-	-		-
#3	Health Center	.2	21,276	4,255	1.4	5,957	10,212	19	537
#4	Clinical: Off Site	-	-	-		-	-		-
#6	General University	.6	17,925	10,755	1.1	11,831	22,586	19	1,189
	PROGRAM TOTAL	7.9		100,182		71,370	171,552	19	9,029

OSU:SAMP: Cost Study: Program Cost Analysis Steps 7-12 for Medical Record Administration Actual 1974-75

TEACHING RESPONSIBILITY UNIT: FACULTY TYPE:	STEP	Step 7	Step 8	Step 9	Step 10		Step 11	Step 12	
	CALCULATION PROCESS			Step 7 X 8 =	Actual or Step 9 X OC Factor		Step 9 & 10 =	Step 11 ÷	Student Number
	ELEMENT	Faculty FTE	Average Salary $	Faculty Cost $	Other Cost Factor	Other Cost $	Total Cost $	Student Number	Cost pe Student $ Averag
#1 Medical Record On Site:									
Full-Time		2.0	13,368	26,736					
Part-Time		-	-	-					
GTA									
Total		2.0		26,736	Actual	59,578	86,314	51	1,692
Guest Lecturers		-	-	-					
Clinical Faculty		.6	14,000	8,400	1.4	11,760	20,160	51	395
Unit Total		2.6		35,136		71,338	106,474	51	2,087
#2 SAMP		.2	16,544	3,309	1.4	4,633	7,942	51	156
#3 Health Center		.2	21,276	4,255	1.4	5,957	10,212	51	200
#4 Clinical: Off Site		1.5	14,000	21,000	1.4	29,400	50,400	51	988
#6 General University		.7	17,925	12,548	1.1	13,803	26,351	51	517
PROGRAM TOTAL		5.2		76,248		125,131	201,379	51	3,948

OSU:SAMP: Cost Study: Program Cost Analysis Steps 7-12 for Medical Technology Actual 1974-75

TEACHING RESPONSIBILITY UNIT: FACULTY TYPE:	STEP	Step 7	Step 8	Step 9	Step 10		Step 11	Step 12	
	CALCULATION PROCESS			Step 7 X 8 =	Actual or Step 9 X OC Factor		Step 9 & 10 =	Step 11 ÷ Student Number	
	ELEMENT	Faculty FTE	Average Salary $	Faculty Cost $	Other Cost Factor	Other Cost $	Total Cost $	Student Number	Cost per Student $ Average
#1	Medical Technology On Site:								
	Full-Time	5.0	12,912	64,560					
	Part-Time	.6	11,665	6,999					
	GTA								
	Total	5.6		71,559	Actual	184,814	256,373	109	2,352
	Guest Lecturers	.7	12,912	9,038	1.4	12,653	21,691	109	199
	Clinical Faculty	2.9	9,422	27,324	1.4	38,254	65,578	109	602
	Unit Total	9.2		107,921		235,721	343,642	109	3,153
#2	SAMP	-		-		-	-		-
#3	Health Center	.5	21,276	10,638	1.4	14,893	25,531	109	234
#4	Clinical: Off Site	-	-	-		-	-		-
#6	General University	2.0	17,925	35,850	1.1	39,435	75,285	109	691
	PROGRAM TOTAL	11.7		154,409		290,049	444,458	109	4,078

OSU:SAMP: Cost Study: Program Cost Analysis Steps 7-12 for Occupational Therapy Actual 1974-75

TEACHING RESPONSIBILITY UNIT: FACULTY TYPE:	STEP	Step 7	Step 8	Step 9	Step 10		Step 11	Step 12	
	CALCULATION PROCESS			Step 7 X 8 =	Actual or Step 9 X OC Factor		Step 9 & 10 =	Step 11 ÷ Student Number	
	ELEMENT	Faculty FTE	Average Salary $	Faculty Cost $	Other Cost Factor	Other Cost $	Total Cost $	Student Number	Cost per Student $ Average
#1 Occupational Therapy									
On Site:									
Full-Time		5.0	15,120	75,600					
Part-Time		1.0	12,318	12,318					
GTA		1.0	10,800	10,800					
Total		7.0		98,718	Actual	162,408	261,126	194	1,346
Guest Lecturers		.1	15,120	1,512	1.4	2,117	3,629	194	19
Clinical Faculty		1.5	14,000	21,000	1.4	29,400	50,400	194	260
Unit Total		8.6		121,230		193,925	315,155	194	1,625
#2 SAMP		.8	16,544	13,235	1.4	18,529	31,764	194	164
#3 Health Center		1.5	21,276	31,914	1.4	44,680	76,594	194	395
#4 Clinical: Off Site		16.7	14,000	233,800	1.4	327,320	561,120	194	2,892
#6 General University		3.6	17,925	64,530	1.1	70,983	135,513	194	699
PROGRAM TOTAL		31.2		464,709		655,437	1,120,146	194	5,775

OSU:SAMP: Cost Study Program Cost Analysis Steps 7-12 for Physical Therapy Actual 1974-75

TEACHING RESPONSIBILITY UNIT: FACULTY TYPE:	STEP	Step 7	Step 8	Step 9	Step 10		Step 11	Step 12	
	CALCULATION PROCESS			Step 7 X 8 =	Actual or Step 9 X OC Factor		Step 9 & 10 =	Step 11 ÷ Student Number	
	ELEMENT	Faculty FTE	Average Salary $	Faculty Cost $	Other Cost Factor	Other Cost $	Total Cost $	Student Number	Cost per Student $ Average
#1	Physical Therapy On Site:								
	Full-Time	5.0	15,432	77,160					
	Part-Time	1.0	11,952	11,952					
	GTA	.1	9,360	936					
	Total	6.1		90,048	Actual	188,200	278,248	300	927
	Guest Lecturers	.1	15,432	1,543	1.4	2,160	3,703	300	12
	Clinical Faculty	-	-	-		-	-		-
	Unit Total	6.2		91,591		190,360	281,951	300	939
#2	SAMP	.6	16,544	9,926	1.4	13,896	23,822	300	79
#3	Health Center	2.2	21,276	46,807	1.4	65,530	112,337	300	374
#4	Clinical: Off Site	6.9	14,444	99,664	1.4	139,530	239,194	300	797
#6	General University	4.4	17,925	78,870	1.1	86,757	165,627	300	552
	PROGRAM TOTAL	20.3		326,858		496,073	822,931	300	2,741

OSU:SAMP: Cost Study: Program Cost Analysis Steps 7-12 for Radiologic Technology Actual 1974-75

TEACHING RESPONSIBILITY UNIT: FACULTY TYPE:	STEP	Step 7	Step 8	Step 9	Step 10		Step 11	Step 12	
	CALCULATION PROCESS			Step 7 X 8 =	Actual or Step 9 X OC Factor		Step 9 & 10 =	Step 11 ÷ Student Number	
	ELEMENT	Faculty FTE	Average Salary $	Faculty Cost $	Other Cost Factor	Other Cost $	Total Cost $	Student Number	Cost per Student $ Average
#1	Radiologic Technology								
	On Site:								
	Full-Time	3.0	15,568	46,704					
	Part-Time	-	-	-					
	GTA								
	Total	3.0		46,704	Actual	67,025	113,729	49	2,321
	Guest Lecturers	-	-	-		-	-		-
	Clinical Faculty	1.8	9,110	16,398	1.4	22,957	39,355	49	803
	Unit Total	4.8		63,102		89,982	153,084	49	3,124
#2	SAMP	-	-	-		-	-		-
#3	Health Center	.1	21,276	2,128	1.4	2,979	5,107	49	104
#4	Clinical: Off Site	-	-	-		-	-		-
#6	General University	.7	17,925	12,548	1.1	13,803	26,351	49	538
	PROGRAM TOTAL	5.6		77,778		106,764	184,542	49	3,766

OSU:SAMP: Cost Study: Program Cost Analysis Steps 7-12 for Respiratory Technology Actual 1974-75

TEACHING RESPONSIBILITY UNIT: FACULTY TYPE:	STEP	Step 7	Step 8	Step 9	Step 10		Step 11	Step 12	
	CALCULATION PROCESS			Step 7 X 8 =	Actual or Step 9 X OC Factor		Step 9 & 10 =	Step 11 ÷ Student Number	
	ELEMENT	Faculty FTE	Average Salary $	Faculty Cost $	Other Cost Factor	Other Cost $	Total Cost $	Student Number	Cost per Student $ Average
#1	Respiratory Technology								
	On Site:								
	Full-Time	3.0	14,448	43,344					
	Part-Time	-	-	-					
	GTA	-	-	-					
	Total	3.0		43,344	Actual	56,596	99,940	41	2,437
	Guest Lecturers	-	-	-		-	-		-
	Clinical Faculty	.9	9,500	8,550	1.4	11,970	20,520	41	500
	Unit Total	3.9		51,894		68,566	120,460	41	2,937
#2	SAMP	-	-	-		-	-		-
#3	Health Center	.3	21,276	6,383	1.4	8,936	15,319	41	374
#4	Clinical: Off Site	-	-	-		-	-		-
#6	General University	.7	17,925	12,548	1.1	13,803	26,351	41	643
	PROGRAM TOTAL	4.9		70,825		91,305	162,130	41	3,954